Platform Process Manager
Version 9 Release 1 Modification 3

Administering Platform Process Manager

SC22-5398-02

Platform Process Manager
Version 9 Release 1 Modification 3

Administering Platform Process Manager

SC22-5398-02

Note
Before using this information and the product it supports, read the information in "Notices" on page 171.

First edition

This edition applies to version 9, release 1, modification 3 of Platform Process Manager (product number 5725G82) and to all subsequent releases and modifications until otherwise indicated in new editions.

Contents

Chapter 1. About Platform Process Manager

This chapter introduces Platform Process Manager(Process Manager) concepts and contains an overview of the Process Manager architecture. It also briefly describes the Process Manager Client components and their use.

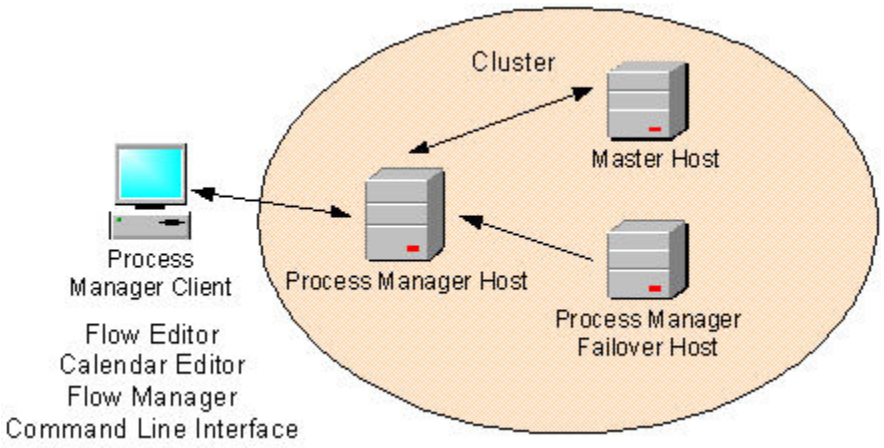
Overview

Process Manager is a workload management tool that allows users to automate their business processes in UNIX and Windows environments. Process Manager provides flexible scheduling capabilities and load balancing in an extensible, robust execution environment.

Using the Process Manager Client, users can create and submit complex flow definitions to Process Manager Server, which manages the dependencies within a flow and controls the submission of jobs to the Platform LSF(LSF®) master host. LSF provides resource management and load balancing, and runs the jobs and returns job status to the Process Manager Server. From Process Manager Client, users can also monitor and control their workflows within Process Manager.

An optional failover host provides Process Manager Server redundancy in the event that it experiences an outage.

Components



The system is made up of the following components:

- The Process Manager (Server) host
- The Process Manager (Server) failover host
- The Master host
- Process Manager Client, which consists of the following:
  - Process Manager Designer
    - The Flow Editor
    - The Calendar Editor
  - The Flow Manager

– The Command Line Interface (CLI)

Process Manager Server

The Process Manager Server consists of a single daemon, `jfd`. The Process Manager Server controls the submission of jobs to LSF, managing any dependencies between work items.

Running multiple Process Manager servers and daemons

You can have multiple Process Manager servers in a single IBM® LSF cluster, and you can install and run multiple instances of **`jfd`** on one or more Process Manager servers. This is useful, for example, if you have different Process Manager environments running in one cluster.

To avoid conflicts and to ensure that each job is unique among multiple Process Manager servers, you must ensure that each combination of user name and flow name is unique within the cluster.

The Process Manager Server failover host

An optional failover daemon (`fod`) is available for UNIX servers. The failover daemon starts the Process Manager Server and monitors its health. If required, the failover daemon starts the Process Manager Server on the failover machine.

Master host

The master host receives jobs from the Process Manager Server, manages any resource dependencies the job may have, and dispatches the job to an appropriate LSF host.

LSF master host

LSF dispatches all jobs submitted to it by the Process Manager Server, and returns the status of each job to the Process Manager Server. It also manages any resource requirements and load balancing within the compute cluster.

Process Manager Client

The Process Manager Client contains the graphical client applications that work with Process Manager: the Process Manager Designer and the Flow Manager.

Process Manager Designer

The Process Manager Designer allows users to edit Process Manager flows and calendars by using the Flow Editor and the Calendar Editor.

Flow Editor:
Users use the Flow Editor to create flow definitions: the jobs and their relationships with other jobs in the flow, any dependencies they have on files, and any time dependencies they may have. Users also use the Flow Editor to submit their flow definitions, which places them under the control of Process Manager.

Tip:

Flow Editor may not be installed if you purchased the Platform Suite for SAS. For more information, contact your sales representative.

Calendar Editor:
Users use the Calendar Editor to define calendars, which Process Manager uses to calculate the days on which a job or flow should run. Calendars contain either

specific dates or expressions that resolve to a series of dates. Process Manager calendars are independent of jobs, flow definitions and flows, so that they can be reused.

Users can create and modify their own calendars. These are referred to as *user* calendars. The Process Manager administrator can create calendars that can be used by any user of Process Manager. These are referred to as *system* calendars. Process Manager includes a number of built-in system calendars so you do not need to define some of the more commonly used expressions.

Flow Manager

Users use the Flow Manager to trigger, monitor and control running flows, and to obtain history information about completed flows.

The command line interface

Users use the command line interface to submit predefined flows to the Process Manager Server, to trigger, monitor and control running flows, and to obtain history information about completed flows.

Security

Process Manager, in its default configuration, provides security through the following methods:

- User authentication
- Role-based access control

User authentication

We support two models for user authentication. In `js.conf`, specify `JS_LOGIN_REQUIRED=true|false`, which indicates whether a user is asked to log in when they start Process Manager Clients or not.

If `JS_LOGIN_REQUIRED=false` , no log in is required.

If `JS_LOGIN_REQUIRED=true`, when the user starts Calendar Editor or Flow Manager they are prompted for a user name and password which is verified by the Process Manager Server. If the user name is a Windows user name, it must also include the domain name. The domain name and user name are passed to the server for verification. The Process Manager Server tries to verify the user name from the domain.

Communications are encrypted using a CAST Cipher with a 64-bit private key.

LDAP

Process Manager supports LDAP authentication through PAM (Pluggable Authentication Modules, a 3rd-party tool) if `JS_LOGIN_REQUIRED=true`.

To enable LDAP authentication, you need to configure your PAM policy to add a service name `eauth_userpass` for the module type: `auth`.

For example, in a Solaris system, you may add the following entry in the `/etc/pam.conf` file:

```
eauth_userpass   auth    required    pam_ldap.so.1
```

Role-based access control

In addition to authentication, Process Manager uses role-based access control to secure certain types of objects.

By default, any user in Process Manager can create and submit their own flow definitions, and monitor and control their own flows, as long as their user ID is recognized by LSF. In addition, by default all users can view calendars and flows submitted by another user. However, special permissions are required to install and configure Process Manager, or to modify Process Manager items on behalf of another user.

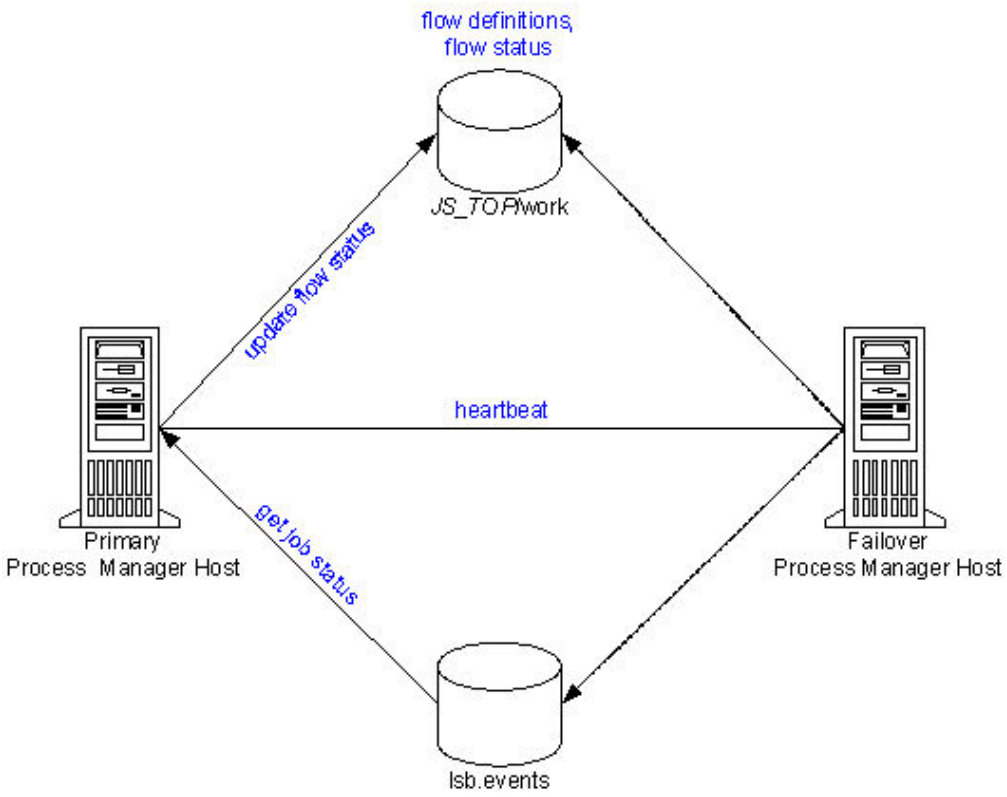
Process Manager recognizes the following roles:

- Normal user
- Primary Process Manager administrator
- Process Manager administrator
- Process Manager Control administrator
- Process Manager Group administrator

About Failover

Process Manager supports an optional failover feature, which provides redundancy for the Process Manager Server. The failover feature allows you to configure a second Process Manager Server host to take over the responsibilities of the primary Process Manager Server host if it should fail. The failover feature includes the Platform EGO(EGO) or failover daemon (`fod`, in case of UNIX), which starts the Process Manager Server on the primary Process Manager Server host. The failover daemon monitors the health of the primary Process Manager Server, starting Process Manager Server on the failover host if the primary fails to respond within a certain time period.

The failover feature relies on a shared file system for access to the working directory of the Process Manager Server.



1. Process Manager Server updates flow status in its working directory based on data it reads from `lsb.events`.
2. The `fod` or EGO on the failover host monitors the primary host. If it receives no response from the heartbeat, it assumes the primary host is down, and starts `jfd` on the failover host. Process Manager Server is now running on the failover host.
3. The `fod` or EGO on the failover host continues to monitor for a response from the primary host. When it receives a response, it stops `jfd` on the failover host, returning control to the primary host.

   The failover host requires access to both the Process Manager working directory *JS_TOP*`/work`, and the events file `lsb.events`.

About Calendars

Process Manager uses calendars to define the dates in a time event, which is used to determine when a flow triggers or a job runs. Calendars are defined independently of flows and jobs so that they can be associated with multiple time events.

A time event consists of the date and time to trigger the event, and the duration in which the event is valid (in time or number of occurrences). The calendar provides the date specification for the time event.

Process Manager has two types of calendars:

- User calendars
- System calendars

  You create both types of calendars using the Calendar Editor.

Users can only manipulate their own calendars, but they can use system calendars and calendars belonging to other users when combining calendars.

About user calendars

User calendars are created by individual users. Users create a new calendar when they have a requirement for a unique time event, and no calendar in the current list of calendars resolves to the correct date or set of dates. Users can create simple calendars, or calendars that combine multiple calendars, both user and system, to create complex schedule criteria.

These calendars are owned by the user who created them and can be used by any user. Only the owner can modify or delete these calendars.

About system calendars

System calendars are built-in or created by a Process Manager administrator. These calendars are owned by the virtual user `Sys` and can be used by any user.

Process Manager comes with a set of pre-defined system calendars that you can use as is to suit the needs of your site. In addition to these built-in calendars, the Process Manager administrator may define other system calendars.

About changing or deleting calendars

Once created, calendars can be changed or deleted. However, if you change or delete a calendar when it is in use (that is, when a flow definition is triggered by an event that uses the calendar, when a flow is running and contains a time event that uses that calendar, or when the calendar is referenced by another calendar), your changes will only take effect on any new instances; current instances will continue to use the previous calendar definition.

Time zones

It is possible for users to run their Process Manager Clients from a different geographic time zone than the Process Manager Server. Therefore it is important to note that, by default, all time events specified in a flow definition are based on the time zone set in JS_TIME_ZONE. For example, Joe is in Los Angeles and is connected to a Process Manager server in New York. He has set JS_TIME_ZONE=server. When Joe defines a flow to trigger at 5 p.m, it triggers at 5 p.m. New York time, not Los Angeles time.

If you change the time zone, you must restart Process Manager.

You can also change the time zone of a specific time event when you create that time event.

All start times displayed for a work item in Flow Manager are in GMT (Universal Time).

Tip:

Note that the time used with the calendars is based on the time zone set in JS_TIME_ZONE. The time zone can be set as server, client (default), or Universal Time (UTC also known as GMT).

Built-in system calendars

Types of Calendars	Calendar Names
Weekly calendars	Mondays@Sys
	Tuesdays@Sys
	Wednesdays@Sys
	Thursdays@Sys
	Fridays@Sys
	Saturdays@Sys
	Sundays@Sys
	Daily@Sys
	Weekdays@Sys
	Weekends@Sys
	Businessdays@Sys
Monthly calendars	First_monday_of_month@Sys
	First_tuesday_of_month@Sys
	First_wednesday_of_month@Sys
	First_thursday_of_month@Sys
	First_friday_of_month@Sys
	First_saturday_of_month@Sys
	First_sunday_of_month@Sys
	First_weekday_of_month@Sys
	Last_weekday_of_month@Sys
	First_businessday_of_month@Sys
	Last_businessday_of_month@Sys
	Biweekly_pay_days@Sys
Yearly calendars	Holidays@Sys
	First_day_of_year@Sys
	Last_day_of_year@Sys
	First_businessday_of_year@Sys
	Last_businessday_of_year@Sys
	First_weekday_of_year@Sys
	Last_weekday_of_year@Sys

The Holidays@Sys calendar

When you receive Process Manager, it comes with some predefined system calendars. Most of these calendars are ready to be used. The calendar Holidays@Sys can be a particularly important calendar for use in creating schedules, but it should be edited to reflect your company holidays, before users begin creating schedules. It should also be updated annually, to reflect the current year's statutory holidays, company-specific holidays, and so on.

Some of the other built-in calendars rely on the accuracy of Holidays@Sys, including any calendar that defines business days, since a business day is a weekday that is not a holiday.

The Biweekly_pay_days@Sys calendar

The Biweekly_pay_days@Sys calendar assumes a Friday pay day. If biweekly pay days are a different day of the week, edit this calendar to specify the correct day of the week for pay days.

About Exceptions

Process Manager provides flexible ways to handle certain job processing failures so that you can define what to do when these failures occur. A failure of a job to process is indicated by an exception. Process Manager provides some built-in exception handlers you can use to automate the recovery process, and an alarm facility you can use to notify people of particular failures.

Process Manager monitors for the following exceptions:

- Misschedule
- Overrun
- Underrun
- Start Failed
- Cannot Run

Misschedule

A *Misschedule* exception occurs when a work item depends on a time event, but is unable to start during the duration of that event. There are many reasons why your job can miss its schedule. For example, you may have specified a dependency that was not satisfied while the time event was active.

Overrun

An *Overrun* exception occurs when a work item exceeds its maximum allowable run time. You use this exception to detect run away or hung jobs.

Underrun

An *Underrun* exception occurs when a work item finishes sooner than its minimum expected run time. You use this exception to detect when a job finishes prematurely.

Start Failed

A *Start Failed* exception occurs when a job or job array is unable to run because its execution environment could not be set up properly. Typical reasons for this exception include lack of system resources such as a process table was full on the compute host, or a file system was not mounted properly.

Cannot Run

A *Cannot Run* exception occurs when a job or job array cannot proceed because of an error in submission. A typical reason for this exception might be an invalid job parameter.

User-specified conditions

In addition to the exceptions, you can specify and handle other conditions, depending on the type of work item you are defining. For example, when you are defining a job, you can monitor the job for a particular exit code, and automatically rerun the job if the exit code occurs. The behavior when one of these conditions occurs depends on what you specify in the flow definition.

You can monitor for the following conditions:

Work Item	Condition
Flow	An exit code of *n* (sum of all exit codes)
	n unsuccessful jobs
	A work item has exit code of *n*
Subflow	An exit code of *n*
	n unsuccessful jobs
	A work item has exit code of *n*
Job	An exit code of *n*
Job array	An exit code of *n*
	n unsuccessful jobs

Behavior when an exception occurs

The following describes the behavior when an exception occurs, and no automatic exception handling is specified:

When a...	Experiences this exception...	This happens...
Flow definition	Misschedule	The flow is not triggered.

When a...	Experiences this exception...	This happens...
Flow	Overrun	The flow continues to run after the exception occurs. The run time is calculated from when the flow is first triggered until its status changes from Running to Exit or Done, or until the Overrun time is reached, whichever comes first.
	Underrun	The time is calculated from when the flow is first triggered until its status changes from Running to Exit or Done.
Subflow	Misschedule	The subflow is not run.
	Overrun	The subflow continues to run after the exception occurs. The run time is calculated from when the subflow is first triggered until its status changes from Running to Exit or Done, or until the Overrun time is reached, whichever comes first.
	Underrun	The time is calculated from when the subflow first starts running until its status changes from running to Exit or Done.
Job	Misschedule	The job is not run.
	Cannot Run	The job is not run.
	Start Failed	The job is still waiting. Submission of the job is retried until the configured number of retry times. If the job still cannot run, a Cannot Run exception is raised. The default number of retry times is 20.
	Overrun	The job continues to run after the exception occurs. The run time is calculated from when the job is successfully submitted until it reaches Exit or Done state, or until the Overrun time is reached, whichever comes first.
	Underrun	The time is calculated from when the job is successfully submitted until it reaches Exit or Done state.

When a...	Experiences this exception...	This happens...
Job array	Misschedule	The job array is not run.
	Cannot Run	The job array is not run.
	Start Failed	The job array is still waiting. Submission of the job array is retried the configured number of retry times. If the job array still cannot be started, a Cannot Run exception is raised. The default number of retry times is 20.
	Overrun	The job array continues to run after the exception occurs. The run time is calculated from when the job array is successfully submitted until its status changes from Running to Exit or Done, or until the Overrun time is reached, whichever comes first.
	Underrun	The time is calculated from when the job array is successfully submitted until each element in the array reaches Exit or Done state.

About Exception Handling

Process Manager provides built-in exception handlers you can use to automatically take corrective action when certain exceptions occur, minimizing the human intervention required. You can also define your own exception handlers for certain conditions.

Built-in exception handlers

The built-in exception handlers are:

- Rerun
- Kill
- Opening an alarm

Rerun

The *Rerun* exception handler reruns the entire work item. Use this exception handler in situations where rerunning the work item can fix the problem. The Rerun exception handler can be used with Underrun, Exit and Start Failed exceptions. Work items that have a dependency on a work item that is being rerun cannot have their dependency met until the work item has rerun the last time. When selecting the Rerun exception handler, you can specify the maximum number of times the exception handler reruns the work item.

Kill

The *Kill* exception handler kills the work item. Use this exception handler when a work item has overrun its time limits. The Kill exception handler can be used with the Overrun exception, and when you are monitoring for the number of jobs done or exited in a flow or subflow.

If you are running z/OS® mainframe jobs on Windows, you need to configure a special queue and submit jobs to that queue to be able kill them.

Alarm

An *alarm* provides both a visual cue that an exception has occurred, and either sends an email notification or executes a script. You use an alarm to notify key personnel, such as database administrators, of problems that require attention. An alarm has no effect on the flow itself.

You can use an alarm as an automated exception handler for many types of exceptions.

An opened alarm appears in the list of open alarms in the Flow Manager until the history log file containing the alarm is deleted or archived.

Alarms are configured by the Process Manager administrator.

Behavior when built-in exception handlers are used

The following describes the behavior when an exception handler is used.

Flows

When a Flow Experiences this Exception...	and the Handler Used is...	This Happens...
Overrun	Kill	The flow is killed. All incomplete jobs in the flow are killed. The flow status is 'Killed'.
	Alarm	The alarm is opened. The flow continues execution as designed.
Underrun	Rerun	Flows that have a dependency on the success of this flow may not be triggered, depending on the type of dependency. The flow is recreated with the same flow ID. The flow is rerun from the first job, as many times as required until the execution time exceeds the underrun time specified.
	Alarm	The alarm is opened.
Flow has exit code of *n*	Rerun	Flows that have a dependency on this flow may not be triggered, depending on the type of dependency. The flow is recreated with the same flow ID. The flow is rerun from the first job, as many times as required until an exit code other than *n* is reached.
	Alarm	The alarm is opened. Flows that have a dependency on this flow may not be triggered, depending on the type of dependency.
n unsuccessful jobs	Kill	The flow is killed. All incomplete jobs in the flow are killed. The flow status is 'Killed'.
	Alarm	The alarm is opened. Flows that have a dependency on this flow may not be triggered, depending on the type of dependency. The flow continues execution as designed.

When a Flow Experiences this Exception...	and the Handler Used is...	This Happens...
Work item has exit code of *n*	Rerun	Flows that have a dependency on this flow may not be triggered, depending on the type of dependency. The flow is rerun from the first job, as many times as required until the work item has a different exit code.

Subflows

When a Subflow Experiences this Exception...	and the Handler Used is...	This Happens...
Overrun	Kill	The subflow is killed. The flow behaves as designed.
	Alarm	The alarm is opened. Both the flow and subflow continue execution as designed.
Underrun	Rerun	Work items that have a dependency on this subflow may not be triggered, depending on the type of dependency. The subflow is rerun from the first job, as many times as required until the execution time exceeds the underrun time specified.
	Alarm	The alarm is opened. The flow continues execution as designed.
Subflow has exit code of *n*	Rerun	Work items that have a dependency on this subflow may not be triggered, depending on the type of dependency. The subflow is rerun from the first job, as many times as required until an exit code other than *n* is reached.
	Alarm	The alarm is opened. The flow continues execution as designed.
n unsuccessful jobs	Kill	The subflow is killed. The flow behaves as designed.
	Alarm	The alarm is opened. The flow and subflow continue execution as designed.
A work item has exit code of *n*	Rerun	Work items that have a dependency on this flow may not be triggered, depending on the type of dependency. The flow is rerun from the first job, as many times as required until the work item has a different exit code.

Job or job array

When a Job or Job Array Experiences this Exception...	and the Handler Used is...	This Happens...
Overrun	Kill	The job or job array is killed. The flow behaves as designed. The job or job array status is determined by its exit value.
	Alarm	The alarm is opened. Both the flow and job or job array continue to execute as designed.
Underrun	Rerun	Objects that have a dependency on this job or job array may not be triggered, depending on the type of dependency. The job or job array is rerun as many times as required until the execution time exceeds the underrun time specified.
	Alarm	The alarm is opened. The flow continues execution as designed.
An exit code of *n*	Rerun	The job or job array is rerun as many times as required until it ends successfully.
	Alarm	The alarm is opened. The flow behaves as designed.
n unsuccessful jobs	Kill	The job array is killed. The flow behaves as designed. The job array status is determined by its exit value.
	Alarm	The alarm is opened. The flow continues execution as designed.

User-defined exception handlers

In addition to the built-in exception handlers, you can create your flow definitions to handle exceptions by:

- Running a recovery job
- Triggering another flow

Recovery job

You can use a job dependency in a flow definition to run a job that performs some recovery function when an exception occurs.

Recovery flow

You can create a flow that performs some recovery function for another flow. When you submit the recovery flow, specify the name of the flow and exception as an event to trigger the recovery flow.

IPv6 support

The Process Manager Server daemon (JFD) handles communication between the IPv4 and IPv6 hosts in the following manner:

- IPv4 only

  JFD listens on an IPv4 socket and can only accept connections from IPv4 clients.
- IPv6 only

  JFD listens on an IPv6 socket and can only accept connections from IPv6 clients.

- IPv4/IPv6 dual stack

  JFD can accept connections from both IPv4 and IPv6 clients. Most operating systems that support IPv6 can accept both IPv6 and IPv4 connections by emulating an IPv6 address: the operating system converts the IPv4 address to an IPv4-mapped IPv6 address.

  Since Windows XP and Windows Server 2003 do not have this feature, Process Manager creates two sockets for IPv4 and IPv6 on a dual-stack host to handle separate connections from IPv4 and IPv6. This allows all operating systems to handle an IPv4/IPv6 dual-stack host, including supported Windows operating systems.

Chapter 2. Access Control

Users and administrators in Process Manager

In addition to authentication, Process Manager uses role-based access control to secure certain types of objects.

By default, any user in Process Manager can create and submit their own flow definitions, and monitor and control their own flows, as long as their user ID is recognized by LSF. In addition, by default all users can view calendars and flows submitted by another user. However, special permissions are required to install and configure Process Manager, or to modify Process Manager items on behalf of another user.

Configuration of user roles

Role	Where defined	Summary of permissions
Normal user	Any operating system user on LSF hosts. All users are automatically assigned this role.	Normal users can view flow definitions, flows, calendars, and jobs that are owned by all users but can control only work items that they own.
Primary Process Manager administrator	First user that is specified in `JS_ADMINS` in the file `js.conf`.	Required to install a Process Manager Server and change permissions. It is also the user under which the Process Manager Server runs, and is the minimum authority that is required to stop the Process Manager Server. The Primary Process Manager administrator has full control over all work items of all users and can view, control, and modify flow definitions, flows, calendars, and jobs on behalf of other users.
Process Manager administrator	Users that are specified in `JS_ADMINS` in the file `js.conf` after the first one that is listed.	Process Manager administrators have full control over all Process Manager items of all users. Process Manager administrators can view, control, and modify flow definitions, flows, calendars, and jobs on behalf of other users.
Process Manager Control administrator	Users that are specified in `JS_CONTROL_ADMINS` in the file `js.conf`.	Process Manager Control administrators can view flow definitions, flows, calendars, and jobs that are owned by all users and can control flows and jobs on behalf of other users.
Process Manager Group administrator	Users that are specified as GROUP_ADMIN in LSF user groups in the `lsb.users` file when `JS_ENABLE_GROUP_ADMIN=true` in `js.conf`.	Group administrators can view flow definitions, flows, and calendars owned by all users. Group administrators can control flows and jobs on behalf of users who are members of the same LSF user group.

Normal users permissions details

Item	View	Control	Specify Owner(when JS_ENABLE_GROUP_ADMIN=true in js.conf)
Flow definitions	All flow definitions of all users. When JS_LIMIT_USER_VIEW=true in js.conf, can view only flow definitions that they own. When JS_LIMIT_FLOW_CHART_VIEW=true in js.conf, can view only the flow chart of flow definitions that they own.	Can perform all operations only on flow definitions that they own(saved by that user account and as a result, owned by that user account). When JS_CHANGE_FLOW_OWNER=true in js.conf and the flow definition is published, can additionally trigger flows from other users' flow definitions and own those flows.	Cannot set a flow definition owner. The default owner of the flow is the submission user.
Flows	All flows of all users. When JS_LIMIT_USER_VIEW=true in js.conf, can view only flows that they own. When JS_LIMIT_FLOW_CHART_VIEW=true in js.conf, can view only the flow chart of flows if they are the owner of both the flow definition and the flow.	Only flows owned by themselves(from flow definitions that they submitted), all operations. When JS_CHANGE_FLOW_OWNER=true in js.conf and the flow definition is published, can own and perform all operations on flows triggered from other users' flow definitions.	Cannot set a flow owner. Flows are owned by the user that is specified as the owner in the flow definition.
Jobs	All jobs of all users.	Only jobs that they own(running as their user account), all operations.	Cannot set a job owner. The job is owned by the user specified as the **Run As** user in the job definition.
Calendars	All calendars of all users.	Only calendars that they own(that they added), all operations.	Cannot set a calendar owner. The calendar is owned by the user specified as the owner in Calendar Editor.

Process Manager Administrators permissions details

Item	View	Control	Specify Owner(when JS_ENABLE_GROUP_ADMIN=true in js.conf)
Flow definitions	All flow definitions of all users.	All flow definitions of all users, all operations.	The default owner of the flow definition is the submission user, but Process Manager administrators can specify any valid user name as the owner.
Flows	All flows of all users.	All flows of all users, all operations.	Flows are owned by the user that is specified as the owner in the flow definition.
Jobs	All jobs of all users.	All jobs of all users, all operations.	Jobs are owned by the user that is specified as the **Run As** user owner in the job definition.

Item	View	Control	Specify Owner(when JS_ENABLE_GROUP_ADMIN=true in js.conf)
Calendars	All calendars of all users.	All calendars of all users, all operations.	The logged on user is set by default as the calendar owner, but Process Manager administrators can specify any valid user name as the calendar owner.

Process Manager Control Administrators permissions details

Item	View	Control	Specify Owner(when JS_ENABLE_GROUP_ADMIN=true in js.conf)
Flow definitions	All flow definitions of all users. When JS_LIMIT_USER_VIEW=true in js.conf, can view all flow definitions of all users. When JS_LIMIT_FLOW_CHART_VIEW=true in js.conf, can view only the flow chart of flow definitions that they own.	All flow definitions of all users, but cannot submit or remove flow definitions that belong to other users. When JS_CHANGE_FLOW_OWNER=true in js.conf, can trigger flows from other users' flow definitions and own those flows. When JS_CHANGE_FLOW_OWNER=false in js.conf, can trigger flows from other users' flow definitions. The flow owner is the user who submitted the flow definition.	Cannot specify an owner for the flow definition. The flow definition is owned by the user who saves the flow definition.
Flows	All flows of all users. When JS_LIMIT_USER_VIEW=true in js.conf, can view all flows of all users. When JS_LIMIT_FLOW_CHART_VIEW=true in js.conf, can view only the flow chart of flows if they are the owner of both the flow definition and the flow.	All flows of all users, all operations.	Cannot specify an owner for the flow. The flow is owned by the user that is specified as owner in the flow definition. When JS_CHANGE_FLOW_OWNER=true in js.conf, flows are owned by the triggering user. When JS_CHANGE_FLOW_OWNER=false in js.conf, the flow owner is the user who submitted the flow definition.
Jobs	All jobs of all users.	All jobs of all users, all operations.	Cannot specify an owner for the job. The job is owned by the user that is specified as the **Run As** user in the job definition.
Calendars	All calendars of all users.	All calendars of all users, all operations.	Cannot specify a calendar owner. The calendar is owned by the user that is specified as the owner in Calendar Editor.

Process Manager Group Administrators permissions details

Item	View	Control	Specify Owner
Flow definitions	All flow definitions of all users. When `JS_LIMIT_USER_VIEW=true` in `js.conf`, can view only flow definitions owned by members of their user groups. When `JS_LIMIT_FLOW_CHART_VIEW=true` in `js.conf`, can see the flow chart of a flow definition if a member of their group is the owner of the flow definition.	All flow definitions that they own and that are owned by users in their user group, all operations. When `JS_CHANGE_FLOW_OWNER=false` in `js.conf` and the flow definition is published or unpublished, Group administrators can trigger flows that are owned by members of their user groups and the flow owner is that defined in the flow definition. Can perform all operations on those flows. When `JS_CHANGE_FLOW_OWNER=true` in `js.conf` and the flow definition is published or unpublished, Group administrators can trigger flows from flow definitions that are owned by members of their user groups and flows are owned by the triggering user. Can perform all operations on those flows.	The default owner of the flow definition is the submission user. The Process Manager Group administrator can specify a different owner. Valid users for owners are members of the same groups as the Group administrator.
Flows	All flows of all users. When `JS_LIMIT_USER_VIEW=true` in `js.conf`, can view only flows owned by members of their user groups. When `JS_LIMIT_FLOW_CHART_VIEW=true` in `js.conf`, can see the flow chart of a flow only if both the flow definition and flow are owned by members of their group. If the Group member triggers a flow from a published flow definition that is owned by someone not belonging to the user group, the Group administrator and the group member will not be able to see the flow chart of the flow.	All flows that are owned by themselves and users in their user groups, all operations.	The owner of the flow is the user that is specified as owner in the flow definition.
Jobs	All jobs of all users.	All jobs running as themselves and as user accounts in their user groups, all operations.	The owner of the job is the user that is specified as the **Run As** user in the job definition.

Item	View	Control	Specify Owner
Calendars	All calendars of all users.	All calendars that are owned by themselves and by user accounts in their user group, all operations.	By default, the user who adds the calendar is the calendar owner. Process Manager Group administrators can specify a different calendar owner. Valid users for owners are members of the same groups as the Group administrator.

Configure a Process Manager administrator or Control administrator

About this task

Process Manager uses role-based access control to secure certain types of objects. Special permissions are required to install and configure Process Manager, or to modify Process Manager items on behalf of another user.

Procedure

1. Stop the Process Manager Server and edit `js.conf`.
2. To add a Process Manager administrator, for the JS_ADMINS parameter, specify one or more user IDs or user group names after the primary administrator name.

   To specify a list, separate the names with a comma. If the Windows user ID or active directory user group contains spaces, enclose the user ID or group name in quotation marks.

   For example, to specify Windows users and user groups:

   ```
   JS_ADMINS=DOMAIN\lsfadmin,"DOMAIN\Engineering Group",DOMAIN\userA
   ```
3. For JS_CONTROL_ADMINS, specify one or more user IDs or UNIX user group names.

   To specify a list, separate the names with a comma. If the Windows user ID or active directory user group contains spaces, enclose the user ID or group name in quotation marks.

   For example, to specify Windows users and user groups:

   ```
   JS_CONTROL_ADMINS=DOMAIN\admin,"DOMAIN\QA Group",DOMAIN\userA
   ```
4. Complete the instructions for changing your configuration, saving `js.conf` and starting the Process Manager Server.

Configure a Group administrator

Procedure

1. Configure LSF user groups to identify the accounts that are the administrators of the user groups and the accounts that are the members.
   a. As the LSF administrator, log in to any host in the cluster.
   b. Open `lsb.users` and configure user groups.
      - In GROUP_MEMBERS for the LSF user group, specify the accounts that are members of the user group.
      - In GROUP_ADMINS, specify the accounts that are the group administrators.

For example, userA and usergroupB are group administrators of flow definitions, flows, jobs, and calendars owned by account ma1, and userD and userE are group administrators of flow definitions, flows, jobs, and calendars owned by accounts ma2 and ma3.

```
Begin UserGroup
GROUP_NAME     GROUP_MEMBER          USER_SHARES        GROUP_ADMIN
ugroup1        (ma1)                   ()               (userA usergroupB)
ugroup2        (ma2 ma3)               ()               (userD userE)
...
End UserGroup
```

c. Save your changes.

d. Run **badmin ckconfig** to check the new user group definition. If any errors are reported, fix the problem and check the configuration again.

e. Run **badmin reconfig** to reconfigure the cluster.

f. Run **jreconfigadmin** to reload LSF user group information in Process Manager and apply changes.

2. Open the configuration file `js.conf` and enable Group administrators in Process Manager.

   a. Set the parameter JS_ENABLE_GROUP_ADMIN=true to enable Group administrators and allow them to operate on flow definitions, flows, jobs, and calendars owned by accounts that are listed in GROUP_MEMBER in `lsb.users`. The **Owner** field is also enabled in the Flow Attributes in Flow Editor, and in the Calendar description in Calendar Editor.

   b. Restart the Process Manager Server `jfd`.

   ```
   jadmin stop
   jadmin start
   ```

3. Test your configuration.

   a. In Flow Editor, open any flow as a Group administrator.

   For example, Group administrator userA.

   b. Submit the flow.

   The owner of the flow is the account that you specified in the **Flow Attributes**. For example, if you specified ma1 in the Flow Attributes, and your flow name is Sample, your flow name is `ma1:Sample` after submission.

   c. In Flow Manager, trigger the flow as the Group administrator account.

   For example, as user userA, trigger the flow `ma1:Sample`. The flow is owned by account ma1.

   d. In Flow Manager, operate on the flow as the Group administrator account.

   For example, as user userA, suspend and resume the flow `ma1:Sample`.

   e. View information about who submitted the flow, who triggered the flow, and who is the owner of the flow:

   - In Flow Manager, **Runtime Attributes**, you can see the triggering user.
   - From the command line, use the command **jhist** with the `-o all` or `-o` *operator_name* option to view which user owns the flow, submitted the flow, and triggered the flow.

Sign on as a guest

About this task

A guest account allows you to have view access to flows and jobs.

As a guest, you have access to the view-only functionality of Flow Manager and Calendar Editor. You can view but not operate on flow definitions, flows, and jobs. You can view but not create, modify, or delete calendars.

Guest accounts also have access to the following commands:

- jid
- jalarms
- jflows
- jdefs
- jmanuals
- jcals

  Guest accounts do not have access to the Flow Editor or to any other commands.

JS_LOGIN_REQUIRED must be set to true. You can only sign on to the Calendar Editor or Flow Manager. You cannot log on to the Flow Editor.

Procedure

1. Start Calendar Editor or Flow Manager.
2. Login user name: guest

   The user name is case-sensitive.
3. Leave the password blank.
4. Click **OK**.

Limit the guest account

Administrators can limit the guest account so that it cannot view any flows.

Procedure

1. Open `js.conf` for editing.
2. Set the parameter JS_LIMIT_USER_VIEW=true.

Maintain User Passwords

Every job has a user ID associated with it. That user ID must always have a current password in the LSF password file, or the job is unable to run.

If user passwords at your site never expire, you simply need to ensure that all user IDs under which jobs might run initially have a password entered for them in the LSF password file. After that, maintenance is only required to add passwords for new users.

If user passwords at your site expire on a regular basis, you and your users need to be aware that a user's jobs cannot run if their passwords change and the LSF password file is not updated.

Update the LSF password file

There are two ways that a user's password can be updated:

- Automatically
- By running the **lspasswd** command

Automatic updates

Every time a user logs into either the Flow Manager or the Calendar Editor, the user's password is updated in the LSF password file.

Run lspasswd

A user can update their own password without logging into the Flow Manager or Calendar Editor by running the **lspasswd** command. Simply run **lspasswd** and enter the current password when prompted.

Run a job as another user

If you, as the administrator, define a flow that runs a job on behalf of another user, you need to ensure that user's password is in the LSF password file. If the user logs on to either the Flow Manager or Calendar Editor regularly, the password is probably up to date. If not, either you or the user needs to run **lspasswd** to update the user's password so the job can run. Obviously, if you run **lspasswd** on behalf of the user, you need to know the user's password.

Allow users to trigger other users' flows

By default, only Process Manager administrators and Process Manager control administrators can trigger flows created by other users.

Non-administrator users can only trigger flows from flow definitions that they have submitted to Process Manager.

There are situations, however, in which you may want some users to create and submit flow definitions and other users to be able to trigger flows from these flow definitions and control them. In these cases, you want to create flow definitions that can be shared across users and you want the users who triggered the flow to own the flow.

When a user owns the flow, the user also has permission to control the flow and jobs in that flow. See the description of JS_CHANGE_FLOW_OWNER in this guide, under *Files*, *js.conf* for more details on permissions.

To allow users to trigger flows from flow definitions created by other users:

1. Set the parameter `JS_CHANGE_FLOW_OWNER=true` in `js.conf`. When this parameter is set to true:

   Note: This feature only applies to flow definitions that have the status Published.

   - Users other than the user who submitted the flow definition can trigger the flow.
   - When the flow is triggered, the flow owner is the user who triggered the flow. Jobs in the flow run as the user who triggered the flow.
   - In Flow Manager, the value defined in the job definition `Run As` field is replaced with the user name of the user who triggered the flow.
2. Restart the Process Manager Server.
3. Publish the flow definition to Process Manager.

Restrict who can see the flow chart view

By default, users who can view a flow or flow definition in Flow Manager can see everything about the flow: the flow chart, general information, subflows and jobs, flow data, and flow history.

In some cases, however, you may not want users to see the chart view of a flow.

It is possible to restrict viewing the chart view of a flow and flow definition, to only the Process Manager administrator and users who are both the flow definition owner and flow owner.

This restriction takes effect in Flow Manager. In Flow Manager, if the user does not have permission to see the flow chart, the related menu items will be grayed out.

To restrict who can see the flow chart view:

1. Set the parameter `JS_LIMIT_FLOW_CHART_VIEW=true` in `js.conf`.
2. Restart the Process Manager Server.

Integrating Kerberos with Process Manager

When the Kerberos integration is enabled, Platform Process Manager acquires and renews user TGTs for operating system user accounts used to run jobs in flows. You can enable the Kerberos integration by setting the LSF parameter `LSB_KRB_TGT_FWD=Y` in the LSF configuration file `lsf.conf`. If you change the value of `LSB_KRB_TGT_FWD` in `lsf.conf`, reconfigure LSF, then restart Process Manager Server to make changes take effect. The Kerberos integration only applies to LSF jobs, job arrays, job submission scripts, and job submission script arrays in flows.

LSF Kerberos parameters used by Process Manager

Process Manager uses the following parameters set in the LSF configuration file `lsf.conf` for integration with Kerberos:

- LSB_KRB_TGT_FWD to identify whether the Kerberos integration is enabled. When set to Y, Kerberos integration is considered to be enabled by Process Manager.
- LSB_KRB_LIB_PATH to determine the location of the krb5 libraries. If not set, it defaults to `/usr/local/lib`.
- LSB_KRB_RENEW_MARGIN to determine whether a user TGT can be renewed before it expires. If the TGT expiration date is within this margin, the Process Manager Server automatically renews the user TGT. This parameter is optional. If not set, the default value of 1 hour is used.
- LSB_KRB_CHECK_INTERVAL to determine how often the Process Manager Server checks whether the Kerberos TGT is within the LSB_KRB_RENEW_MARGIN for TGT renewal. This parameter is optional. If not set, the default value of 15 minutes is used.

Requirements to integrate with Kerberos

- LSF 9.1.1.1 or higher is installed and running
- All user TGTs are renewable and forwardable
- Platform Process Manager Server is installed on Linux/UNIX

Configure to use Kerberos when user login is not required

Complete these configuration steps to enable Platform Process Manager to work with Kerberos when users are not required to log in to Process Manager with a password(JS_LOGIN_REQUIRED=false in `js.conf`).

Before you begin

Ensure you have met the requirements for using Process Manager with Kerberos. See "Requirements to integrate with Kerberos" on page 25 for details.

About this task

When a user can log in to Process Manager without a password (JS_LOGIN_REQUIRED=false in `js.conf` on both the Process Manager client and Process Manager Server) Process Manager attempts to locate the user TGT on the client host in `/tmp/krb5cc_`*`user_UID`*, and if not found, in the environment variable KRB5CCNAME.

Once the user TGT is located, the Process Manager client forwards the user TGT to the Process Manager Server. The user TGT is forwarded with every client request along with the creation time of the user TGT file. The TGT is then copied to the Process Manager Server's work directory, where it is periodically renewed, and forwarded to LSF when jobs in the flow are submitted.

If no user TGT can be located, the client request still proceeds but messages are logged in the history file and in `jfd.log.`*`host_name`*.

Procedure

1. Enable Kerberos authentication in LSF.

   Refer to *Administering Platform LSF* for more details.
2. Set the parameter `LSB_KRB_TGT_FWD=Y` in the LSF configuration file `lsf.conf` and reconfigure LSF to make the changes take effect.

   This setting identifies to Platform Process Manager that Kerberos is enabled.
3. Restart the Process Manager Server to make changes take effect.

   ```
   jadmin stop
   jadmin start
   ```

Configure to use Kerberos when user login is required

Complete these configuration steps to enable Platform Process Manager to work with Kerberos when users are required to log in to Process Manager with a password(JS_LOGIN_REQUIRED=true in `js.conf`).

Before you begin

Ensure you have met the requirements for using Process Manager with Kerberos. See "Requirements to integrate with Kerberos" on page 25 for details.

About this task

When a user is required to log in to Process Manager with a password (JS_LOGIN_REQUIRED=true in `js.conf`), Process Manager uses the Pluggable Authentication Module (PAM) on the Process Manager server to generate a valid user TGT.

Whenever a user successfully logs in to Platform Process Manager, Process Manager generates a valid user TGT in /tmp/krb5cc_*user_UID*. The TGT is then copied to the Process Manager server's work directory, where it is periodically renewed, and forwarded to LSF when jobs in the flow are submitted.

Should Process Manager fail to acquire or renew the user TGT, Process Manager logs history messages and messages in jfd.log.*host_name*..

Procedure

1. Enable Kerberos authentication in LSF.

   Refer to *Administering Platform LSF* for more details.
2. Set the parameter LSB_KRB_TGT_FWD=Y in the LSF configuration file lsf.conf and reconfigure LSF to make the changes take effect.

   This setting identifies to Platform Process Manager that Kerberos is enabled.
3. On the Process Manager Server host, configure the PAM Kerberos module (pam_krb5.so) so that every time a user logs in to the host, a valid user TGT is generated.

   Refer to your Kerberos documentation for more details.
4. Configure a service eauth_userpass file, then add the module pam_krb5.so. This enables Process Manager to authenticate with PAM.
   - On Red Hat Linux:
     a. Check that pam_krb5.so is listed in the file /etc/pam.d/password-auth. For example:

```
#%PAM-1.0# This file is auto-generated.
# # User changes will be destroyed the next time authconfig is run.
auth        required      pam_env.so
auth        sufficient    pam_unix.so nullok try_first_pass
auth        requisite     pam_succeed_if.so uid >= 500 quiet
auth        sufficient    pam_krb5.so use_first_pass
auth        required      pam_deny.so
...
```

     b. Create the /etc/pam.d/eauth_userpass file and include the following line in the file:

```
auth include password-auth
```

   - On SUSE Linux, AIX, Solaris, and HP-UX operating systems, add an entry to the /etc/pam.conf file. For example:

```
eauth_userpass       auth        required       pam_krb5.so
```

5. Restart the Process Manager Server to make changes take effect.

```
jadmin stop
jadmin start
```

Automatically generate and renew user TGTs with the keytab file

In cases when you run flows repeatedly over a long period of time (monthly, annually) or when you have flows that run for a very long time, it is possible that jobs may fail when user TGTs have reached their maximum renewal lifetime period and can no longer be renewed. By configuring a Kerberos keytab file, you can authenticate users with the Kerberos server without prompting for a password. Additionally, you can configure Process Manager to acquire a new TGT for users before their TGT expires so that jobs in flows always have the required credentials to run.

About this task

Procedure

1. Log on as root to the Platform Process Manager Server host and set up the Kerberos keytab file for all user accounts that will be used to run jobs, job arrays, job submission scripts, or job submission script arrays in flows. Refer to your Kerberos documentation for details on how to configure a keytab file.
2. Edit the `js.conf` file, and add parameters to indicate you are using a keytab file with Kerberos.

   Add the following parameters in `js.conf` :

   - `JS_KRB_USE_KEYTAB=true`: When set to true, this parameter specifies to Process Manager to use the Kerberos keytab file to generate user TGTs before reaching the maximum renewal lifetime. The maximum renewal lifetime is specified by the parameter LSB_KRB_RENEW_MARGIN in `lsf.conf`.
   - `JS_KRB_KEYTAB_FILE`: Specify the path to the Kerberos keytab file on the Process Manager server host. If you do not specify it, the default value is `/etc/krb5.keytab`.

   For example:

   ```
   JS_KRB_USE_KEYTAB=true
   JS_KRB_KEYTAB_FILE=/share/mykrb5.keytab
   ```
3. Restart the Process Manager Server to make changes take effect.

   ```
   jadmin stop
   jadmin start
   ```

Chapter 3. Maintaining Process Manager

This chapter describes how to add components to the Process Manager system, how to maintain the system, how to obtain historical information, and some troubleshooting techniques.

Failover

Configure a failover host (managed by EGO)

For EGO failover to function correctly, Process Manager must have its conf and work directories installed in a shared location. When you install Process Manager as an EGO service, Process Manager benefits from the failover features of Platform EGO. If the server running Process Manager fails, Platform EGO relocates and restarts Process Manager on another host.

Before you begin

Prerequisites:

Process Manager must have been installed as an EGO service.

- On Windows, this is done by specifying to install Process Manager as an EGO service during installation.
- On UNIX, this is done by specifying EGO_DAEMON_CONTROL=true in `install.config` at installation.

Procedure

1. In `js.conf`, set `JS_FAILOVER=true` and define `JS_FAILOVER_HOST`.

   The hosts that you define for `JS_HOST` and `JS_FAILOVER_HOST` must both belong to the EGO `ManagementHosts` resource group.
2. Edit the `processmanager.xml` file.
   - Windows: `%LSF_ENVDIR%\ego\cluster_name\eservice\esc\conf\services\processmanager.xml`
   - UNIX: `$LSF_ENVDIR/ego/cluster_name/eservice/esc/conf/services/processmanager.xml`
3. Change the `StartType` from MANUAL to AUTOMATIC.

   Navigate to the following line:

   ```
   <sc:StartType>MANUAL</sc:StartType>
   ```

   Change it to:

   ```
   <sc:StartType>AUTOMATIC</sc:StartType>
   ```
4. Add JS_FAILOVER_HOST to the `ResourceRequirement` select statement.

   Navigate to the following line:

```
<ego:ResourceRequirement>select('JS_HOST')</ego:ResourceRequirement>
```

   Change this line to the following:

```
<ego:ResourceRequirement>select('JS_HOST'||'JS_FAILOVER_HOST') order('JS_FAILOVER_HOST')</ego:ResourceRequirement>
```

5. Save and close the file.
6. Restart EGO to apply your changes.

You will need to log in to EGO first with the command `egosh user login`. The default user name is `Admin`, and the default password is `Admin`.

```
egosh ego restart all
```

Install and configure a failover host on UNIX (managed by failover daemon)

Note:

Follow this procedure only if you have not installed Process Manager as an EGO service.

When you install Process Manager Server, the failover daemon **fod** is automatically installed. You only need to configure the failover host. It is recommended that you do this prior to installing a large number of Process Manager clients, because each client needs to be configured to connect to the failover host automatically if the primary host is unavailable.

Procedure overview:

1. Configure the primary host to recognize the failover host.
2. Prepare the installation files on the failover host.
3. Prepare the configuration on the failover host.
4. Install Process Manager Server on the failover host, and start the failover host.

Configure the primary host

Procedure

1. Log on to the Process Manager Server host as `root` or as the primary Process Manager administrator.
2. Run `jadmin stop`.
3. Edit *JS_TOP*`/conf/js.conf`.
4. For the JS_FAILOVER parameter, specify `true`. Be sure to remove the comment character #.
5. For the JS_FAILOVER_HOST parameter, specify the fully-qualified name of the failover host.
6. Optional. Add JS_FOD_PORT parameter and specify the port number of the failover daemon. If you do not specify a port number, it defaults to 1999.
7. Save `js.conf`.
8. Run `jadmin start` to start Process Manager Server and make your changes take effect.

Prepare the installation files on the failover host

Procedure

Make sure that you have access to the Process Manager distribution files.

1. Copy the installer to the Process Manager directory.
2. Untar the package (for example, `pm9.1.3.0_sas_lnx26-lib23-x64.tar`).

   ```
   % tar xvf /usr/share/pmanager/pm9.1.3.0_sas_lnx26-lib23-x64.tar
   ```

   This creates a directory called `pm9.1.3.0_sas_pinstall`. For example:

   ```
   % ls /usr/share/pmanager/pm9.1.3.0_sas_pinstall/
   ```

3. Copy the Process Manager Server and Process Manager Client distribution files for your operating system to the Process Manager directory. *Do not* untar these files.

Prepare the configuration on the failover host

Procedure

1. Log on to the failover host as `root` or as the primary Process Manager administrator.
2. Make the Process Manager directory current. For example:

   ```
   # cd /usr/share/pmanager/pm9.1.3.0_sas_pinstall
   ```

   Logging installation sequence in `/usr/share/pmanager/pm9.1.3.0_sas_pinstall/pm9.1.3.0_sas_install/Install.log`
3. Copy `install.config` from the Process Manager Server host to the failover host, replacing the one in the installation package.
4. Edit `install.config` as follows:
   a. Add JS_FAILOVER parameter and specify `true`.
   b. Optional. For the JS_FOD_PORT parameter, specify the port number of the failover daemon. If you do not specify a port number, it defaults to 1999. Be sure to remove the comment character #.
5. Save `install.config`.

Install the software on the failover host

Procedure

1. Run **`jsinstall`** to start the installation:

   ```
   # ./jsinstall -f install.config
   ```

   Logging installation sequence in `/usr/share/pmanager/pm9.1.3.0_sas_pinstall/pm9.1.3.0_sas_install/Install.log`
2. Select the Process Manager Server. For example:

   ```
   Searching for Process Manager tar files in
   /usr/share/pmanager/pm9.1.3.0_sas_pinstall please wait ...
   1) [SAS] Linux 2.6-glibc2.3-x86 Server
   2) [SAS] Linux 2.6-glibc2.3-x86 Client
   List the numbers separated by spaces that you want to install. (E.g. 1 3 7, or
   press Enter for all): 1 2
   ```
3. After the installation is complete, set the Process Manager environment:
   - On **`csh`** or **`tcsh`**:

     ```
     # source JS_TOP/conf/cshrc.js
     ```
   - On **`sh`**, **`ksh`** or **`bash`**:

     ```
     # . JS_TOP/conf/profile.js
     ```

   Where *JS_TOP* is the top-level Process Manager installation directory, the value specified in the `install.config` file.
4. Run **`jadmin start`** to start the Process Manager daemon on the failover host:

   ```
   # jadmin start
   ```

Client and server hosts

Add a Windows client

Procedure

1. Copy `pm9.1.3.0_pinstall_sas_client.msi` to the desktop or a shared file location from which you can run it.

2. Run `pm9.1.3.0_pinstall_sas_client.msi` to start the installation.
3. In the **Welcome** dialog, click **Next**
4. In the **Software License Agreement** dialog, click **Accept**.
5. In the **Choose Destination Location** dialog, click **Next** to use to the default location; or click **Browse...** to select a different directory. Click **Next**.
6. In the **Select Components** dialog, select the Process Manager Client. Click `Next`.
7. In the **Client Configuration** dialog:
   a. In the **Host name** field, specify the name of the Process Manager host the desktop will connect to.
   b. In the **Port** field, specify the port number of the Process Manager host. If you used the default port number for the Server, leave the value at 1966.
   c. Optional. In the **Failover** field, specify a failover host that will be used if the primary host is not available.
   d. Click **Next**.
8. Verify that the settings are correct, and click **Next** to complete the installation.
9. Click **Finish**.
10. When the installation is complete, from the **Start** menu, select **IBM Corporation** and **Platform Process Manager**, and the appropriate application: Flow Editor, Flow Manager, or Calendar Editor.

    Both the Flow Manager and the Calendar Editor require a connection to the Server to be able to start. If you are unable to start either of these applications, there is an error in the configuration, or the Server is not yet started.

Run the Process Manager server on system startup

About this task

On UNIX, the Process Manager Server can be configured to start and stop at system startup or shutdown. On Windows, the Process Manager Server runs as a service, and by default, starts and stops automatically with the system.

Procedure

1. Ensure installation of the Process Manager daemon is complete, and that you have sourced the correct environment.
2. Log on as `root` to the host where the Process Manager daemon is installed.
3. Run the following script:

   ```
   #./bootsetup
   ```

   This script picks up your environment information and enables the daemon to start and stop at system boot time.

Dedicate the Process Manager Server Host

If you are running large flows or a large number of flows, it is recommended that you designate your Process Manager Server host as an LSF client host, rather than an LSF server host.

Procedure

1. Edit the LSF cluster file `lsf.cluster.cluster_name`.
2. In the Host section of the file, locate the name of the host on which the Process Manager Server.

3. In the Server column for the primary Process Manager host, enter `0`, which specifies that this is a client host and does not run LSF jobs. For example:

```
Begin Host
HOSTNAME   model    type   server r1m pg tmp RESOURCES      RUNWINDOW
hostA      SparcIPC Sparc  1      3.5 15   0 (sunos frame)  ()
hostD      Sparc10  Sparc  1      3.5 15   0 (sunos)        (5:18:30-1:8:30)
jshost     !        !      0      2.0 10   0 ()             ()
End Host
```

4. Save the file.
5. Run **lsadmin reconfig** and **badmin reconfig** to reconfigure the LSF cluster.

Control the Process Manager Server

Starting and stopping the Server on UNIX

On UNIX, the Process Manager Server has a single daemon, jfd. You control jfd with the jadmin command.

Start the Process Manager daemon:
Procedure

1. Log on to the Process Manager Server host as **root**.
2. Run `jadmin start`. This command starts jfd.

Stop the Process Manager daemon:
Procedure

1. Log on to the Process Manager Server host as **root** or as the primary Process Manager administrator.
2. Run `jadmin stop`. This command stops jfd.

Start and stop the Server on Windows

On Windows, the Process Manager Server runs as a service. By default, it is configured to start and stop automatically when the host is started and stopped.

Start the Process Manager service:
Procedure

1. Click **Start,** select **Settings**, and select **Control Panel.**
2. Double-click **Administrative Tools.**
3. Double-click **Services.**
4. Right-click on the service **Platform Process Manager** and select **Start**.

Stop the Process Manager service:
Procedure

1. Click **Start,** select **Settings**, and select **Control Panel.**
2. Double-click **Administrative Tools.**
3. Double-click **Services.**
4. Right-click on the service **Platform Process Manager** and select **Stop**.

Forcing a system snapshot

About this task

Periodically, Process Manager automatically takes a snapshot of the workload in the system and the current status of each work item. The time period between automatic snapshots is determined by the value set in JS_DATACAPTURE_TIME in `js.conf`. A snapshot is also taken automatically when Process Manager Server is

shut down normally. The information captured is stored in *JS_HOME*/work/system. The information captured in the snapshot is used for recovery purposes, to reconcile job and flow status. The more current the data in the snapshot, the faster the recovery time. When a snapshot is being performed, Process Manager Server pauses its processing—jobs that are running continue to run, but no new work is submitted.

When considering snapshots, you need to balance the time it takes to process the snapshot versus the time it may take to recover from a failure.

It is recommended that you force a snapshot at a time when Process Manager Server is least busy—if that time occurs at a regular interval, schedule it then using the JS_DATACAPTURE_TIME parameter in js.conf.

Procedure

1. Log on to the Process Manager Server host as **root** or as the primary Process Manager administrator.
2. Run jadmin snapshot. The following text appears in the log file:

   ```
   Starting data capture. This may take a while depending upon system workload.
   ```

   When the snapshot is completed, the following text appears in the log file:

   ```
   Data capture completed.
   ```

Variables

About variables in Process Manager

Process Manager provides substitution capabilities through the use of variables. When Process Manager encounters a variable, it substitutes the current value of that variable.

You can use variables as part or all of a file name to make file names flexible, or you can use them to pass arguments to and from scripts. You can export the value of a variable to one or more jobs in a flow, or to other flows that are currently running on the same Process Manager Server. You can also use variables in the index expression of a job array definition, in the message sent when a manual job requires completion, or when a job runs.

You can set a value for a single variable within a script, or set values for a list of variables, and make all of the values available to the flow or to the Process Manager Server. They can use a single variable or a list of variables within a job, job array or file event definition.

Types of variables

Process Manager supports three types of variables:

- Built-in variables
- User variables
- Environment variables

Built-in variables

Built-in variables are those defined by Process Manager, where the value is obtained automatically by Process Manager and made available for use by a flow. No special setup is required to use Process Manager built-in variables. You can use

these variables in many of the job definition fields in Flow Editor.

User variables

User variables are those created by a user. To use a user variable, you must first create a job that sets a runtime value for the variable and exports it to Process Manager. You submit that job to a special queue that is configured to set variables. See your Process Manager administrator for the queue name. Once a value has been set for the variable, you can use the variable in many of the job definition fields in Flow Editor.

There are two types of user variables Process Manager users can set:

- Flow variables—those whose values are available only to jobs, job arrays, subflows or events within the current flow. These variables are set in JS_FLOW_VARIABLE_LIST or in a file specified by JS_FLOW_VARIABLE_FILE.
  - Parent variables are local variables whose values are set at the parent flow scope. If the current flow is the main flow, the variables are set at the main flow scope. These variables are set in JS_PARENT_FLOW_VARIABLE_FILE.

    You use the built-in variable JS_FLOW_SHORT_NAME when you need to use the shortened version of the flow name to avoid a potential name conflict issue when using JS_PARENT_FLOW_VARIABLE_FILE to set parent flow variables. For more details, refer to *Using Platform Process Manager*.
- Global variables—those whose values are available to all the flows within the Process Manager Server. These variables are set in JS_GLOBAL_VARIABLE_LIST or in a file specified by JS_GLOBAL_VARIABLE_FILE.

  User variables can also be used inside environment variables.

Important: When selecting names for user variables, take care not to use the JS_ prefix in your variable names. This prefix is reserved for system use.

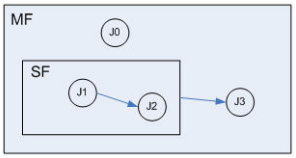
Environment variables

You can submit a job that has environment variables that are used when the job runs. Environment variables can contain user variables.

Scope of variables and variable override order

Variables of the same name specified at different scope levels may override one another. Variables set at an inner subflow scope override those set at an outer subflow scope. This variable override order also applies to default values of input variables.

For example, consider the following flow and job scope levels:



- If the J0 job sets a flow variable A=100, the variable is visible to the main flow MF scope and all subflow scopes (including SF). Therefore, J1, J2, and J3 will all use A=100.

- If J1 sets A=50, J2 will use A=50 because the variable set at the MF_SF subflow scope overrides the variable set at the main flow MF outer scope. However, J3 still uses A=100 because the value at the main flow MF scope is still A=100. J2 uses A=50 even if J0 sets A=100 after J1 sets A=50.

This variable override order also applies to default values of input variables. For example,

- If main flow MF has an input variable IV with a default value of 200, and SF does not have input variables, J0, J1, J2, and J3 will all use IV=200.
- If subflow SF now has the same input variable IV with a default value of 20, J0 and J3 will use IV=200, while J1 and J2 will now use IV=20.
- If J0 sets IV=30, it overrides the default value at the MF scope, but not at the MF:SF subflow scope. Therefore, J1 and J2 will use IV=20, while J3 will use IV=30.
- If J1 sets IV=5, J2 will use IV=5, while J3 still uses IV=30.

Similarly, if you trigger a flow with variables, the variables will only override the default values at the main flow level, but not the default values at subflows. However, if you specified no default values in the subflow, then the specified values are also visible to the subflow.

The variables set by the job have similar scope to variables in any programming language (C, for example). If the job sets the variable in JS_FLOW_VARIABLE_LIST (or in the file specified by JS_FLOW_VARIABLE_FILE) within a subflow, the scope of the variable is limited to the jobs and events within the subflow. This means that the variable is only visible to that subflow and is not visible to the main flow or any other subflows. If the same variable is overwritten by another job within the subflow, the new value is used for all subsequent jobs or events inside that subflow.

If the job sets variables in the file specified by JS_PARENT_FLOW_VARIABLE_FILE within a subflow, the user variable is passed to the parent flow.

Flow variable values override global variable values. Similarly, a value set within a subflow overrides any value set at the flow level, only within the subflow itself.

Environment variables are set in the job definition and the job runs with the variables that are set.

If you use **ppmsetvar** to set user variables and you use **ppmsetvar** multiple times, the variables will be appended. For example, if you run the following, the end result will be a=10, b=2, c=7, and d=100:

```
ppmsetvar -f a=1 b=2
ppmsetvar -f a=10 c=7
ppmsetvar -f d=100
```

If you use **ppmsetvar** in conjunction with other methods of setting user variables in Process Manager, such as a variable file or job starter, note that the variable file can override any variables set with **ppmsetvar** as it is read last.

Dynamic subflows

When specifying input variable values for dynamic subflows, the same rules apply because the specified values are effectively treated as default values of the input variables.

How variables are set

How user variables are set:
User variables are set using the following methods:

- Job starter
- External file
- The command ppmsetvar

Job starter:
This method is still supported for backwards compatibility but is deprecated. Use **ppmsetvar** instead.

Process Manager uses a job starter as a wrapper to a job to export any user variables that are set within the job.

External file:
This method requires a shared filesystem. The `jfd` work directory must be on a shared filesystem accessible by all your jobs.

Process Manager can set user variables by writing to an external file.

Any binary or script will work, as long as it can write to the file. Process Manager sets environment variables for each job or job array: JS_FLOW_VARIABLE_FILE, JS_GLOBAL_VARIABLE_FILE, and JS_PARENT_FLOW_VARIABLE_FILE. In addition, LSF sets the LSB_JOBINDEX environment variable for job arrays to indicate the index of each job array element.

For jobs to set flow variables, the job must write to the file specified by the JS_FLOW_VARIABLE_FILE environment variable. For jobs to set global variables, the job must write to the file specified by the JS_GLOBAL_VARIABLE_FILE environment variable. For jobs to set parent flow variables, the job must write to the file specified by the JS_PARENT_FLOW_VARIABLE_FILE environment variable.

For job arrays to set flow variables, the job array must be able to write to the file specified by the JS_FLOW_VARIABLE_FILE[LSB_JOBINDEX] environment variable; for job arrays to set global variables, the job array must write to the file specified by the JS_GLOBAL_VARIABLE_FILE[LSB_JOBINDEX] environment variable; and for job arrays to set variables for parent flows, the job array must write to the file specified by JS_PARENT_FLOW_VARIABLE_FILE[LSB_JOBINDEX].

The jobs or job arrays write to the files in the following format (each line contains a variable-value pair):

```
VAR1=VALUE1
VAR2=VALUE2
...
```

The values must not contain semicolons (;) or control characters. Process Manager will not initially create these files — the files need to be created by the jobs.

The following example illustrates a script fragment for jobs that assigns file names to set flow, global, and parent flow variables:

```
#{JS_FLOW_VARIABLE_FILE};
#{JS_GLOBAL_VARIABLE_FILE};
#{JS_PARENT_FLOW_VARIABLE_FILE};
```

The following example illustrates a Perl script fragment for job arrays that assigns file names to set flow, global, and parent flow variables:

```
$flowVarFile = $ENV{JS_FLOW_VARIABLE_FILE} . "[" . $ENV{LSB_JOBINDEX} . "]";
$globalVarFile=$ENV{JS_GLOBAL_VARIABLE_FILE} . "[" . $ENV{LSB_JOBINDEX} . "]";
$parentflowVarFile=$ENV{JS_PARENT_FLOW_VARIABLE_FILE} . "[" . $ENV{LSB_JOBINDEX} . "]";
```

The ppmsetvar command:
Only available with Process Manager 9.1 and LSF 9.1 and higher.

You can use the command **ppmsetvar** from an LSF job, job script, job array and job script array to pass user variables from a subflow to a main flow, to set user variables that are used only within a flow, or to set global user variables used by all flows in the system. You can also use **ppmsetvar** to remove specific user variables. You do not need a shared filesystem with ppmsetvar.

Important: This command uses the LSF **bpost** command with slots 4, 5, and 6. If anyone is using **bpost** in your LSF cluster, ensure the slots 4, 5, 6 are not used as this will interfere with the **ppmsetvar** command and may lead to unexpected results.

Setting variables that can be used only by work items within a flow

The following example shows how set a user variable that can be used by all work items within a flow using the command **ppmsetvar**.

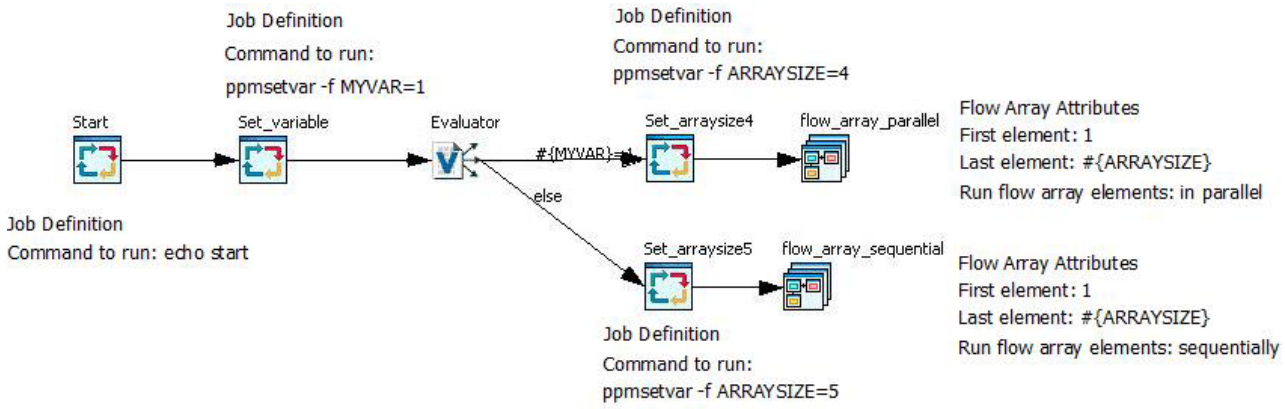
This flow contains two subflows to be run as arrays and a condition evaluator that decides whether to run the arrays in parallel or sequentially. The Set_variable job sets the variable MYVAR=1, which indicates to run the array in parallel. This flow also sets the arraysize at the time the flow array runs.

In this example, the job Set_variable sets MYVAR=1 with ppmsetvar.

In the variable evaluator, when MYVAR=1, the job Set_arraysize4 runs. The job Set_arraysize4 sets the variable ARRAYSIZE=4 with **ppmsetvar**.

In the variable evalutor, when MYVAR is equal to any other number, the job Set_arraysize5 runs. The job Set_arraysize5 sets the variable ARRAYSIZE=5 with **ppmsetvar**.

The flow arrays that follow use the variable set by the the jobs Set_arraysize4 or Set_arraysize5 to define how many times the subflows are run as flow arrays.



Passing Variables between parent flows and subflows

The following example shows how to pass variables from a parent flow to be used by a subflow, and then how to pass a variable from a subflow to its parent using the command **ppmsetvar**.

This flow contains two dynamic subflows and passes the variable MYVAR=100 to one subflow as an input variable to the flow, and MYVAR=200 to the other subflow as an input variable.

Jobs J1 and J2 write the value passed from the subflow to an output file. The output of J1 is xyz100 and the output of J2 is xyz200.

The last job in the subflow passes the variable result_#{JS_FLOW_SHORT_NAME}=xyz#{MYVAR} to the parent flow and also writes the variable to a file. The parent flow accesses the user variable set by the subflow by indicating the subflow name such as `echo result_Dynamic_Subflow1` and `echo result_Dynamic_Subflow2`.

Note: The subflows use the built-in variable #{JS_FLOW_SHORT_NAME} to avoid potential naming conflicts with the main flow.

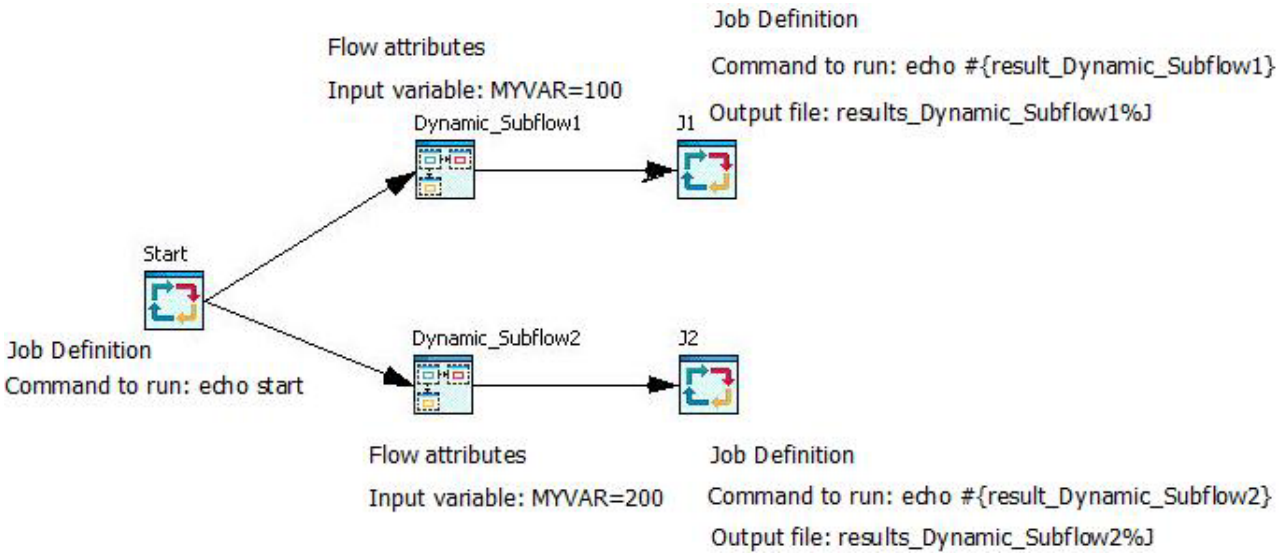


Figure 1. Parent flow

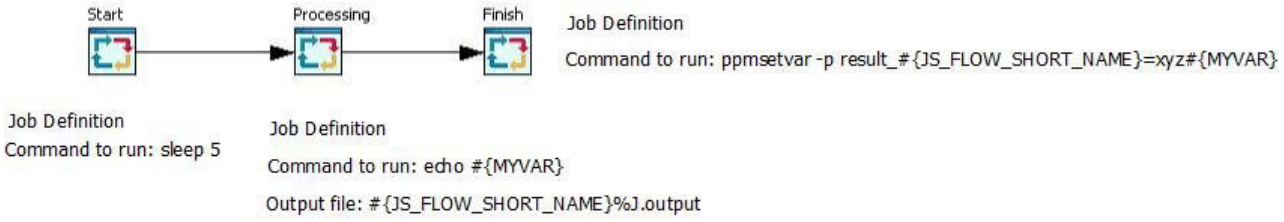


Figure 2. Subflows Dynamic_Subflow1 and Dynamic_Subflow2

Setting a global variable that can be used by any flows in the system

The following example shows how set a variable that can be used by all flows in the system with the command **ppmsetvar**.

In the following example, the last job sets the global variable ALLRESULTS to the value 99. This variable can be used by any flow in the system.

How environment variables are set

For environment variables, a new job attribute is created to store the environment variables. In a Linux environment, a script file is written to a temporary directory

to run the bsub command. In a Windows environment, a temporary directory is used to create and run batch files. The system tries the following directories until it finds one that is writable:

- %TEMP%
- %TMP%
- C:\

Configure to support user variables

About this task

If users in your Process Manager system will be setting and using user variables, you need to configure the system to support this.

Procedure

1. If the Process Manager Server runs on UNIX, and users will be setting variables in jobs that run on UNIX hosts, go to Configure variables for UNIX hosts.
2. If the Process Manager Server runs on Windows, and users will be setting variables in jobs that run on Windows hosts, go to Configure variables for Windows hosts.
3. If the Process Manager Server runs on UNIX and Windows and users will be setting variables from both UNIX and Windows hosts, you need to follow both sets of instructions.
4. If your users will be using many variables in any job definition field, you may need to increase the number of variables that can be substituted at a time per field. Go to Increase the number of variables that can be substituted:" for instructions.

Configure variables for UNIX hosts

Procedure

1. Configure one or more UNIX-specific queues to accept jobs that set variables. See Configure a queue to support setting user variables for instructions.
2. Ensure that the korn shell (ksh) is available on the host, as the korn shell is required to export variables on UNIX.
3. Ensure that the *JS_TOP* directory is accessible by all LSF hosts that will run jobs that set variables—on a shared file system.

Configure variables for Windows hosts

Procedure

1. Configure one or more Windows-specific queues to accept jobs that set variables. See Configure a queue to support setting user variables for instructions.
2. Ensure that the *JS_TOP* directory is accessible by all LSF hosts that will run jobs that set variables—on a shared file system.

Configure variables for both UNIX and Windows hosts

Procedure

1. Configure at least one Windows-specific queue and at least one Linux-specific queue to accept jobs that set variables. See Configure a queue to support setting user variables for instructions.

2. On the UNIX LSF hosts, ensure that the korn shell (ksh) is available, as the korn shell is required to export variables on UNIX.
3. Log on to the Process Manager Server host as root or as the primary Process Manager administrator.
4. Configure the Server host as follows:
   a. Copy `pm9.1.3.0_writevar_w2k.tar.Z` to the directory containing the Process Manager distribution files.
   b. Run **jsinstall** to start the installation:
      ```
      # ./jsinstall -f install.config
      ```
   c. Select **Windows 2000 Variables** from the list of components to install.
   d. Press **Enter** to complete the installation.
5. Edit **jsstarter.bat**
6. Set a value for *JS_TOP*. For example:
   ```
   set JS_TOP=\\user\share\js
   ```
7. Save **jsstarter.bat**.
8. Ensure that the *JS_TOP* directory is accessible by all LSF hosts that will run jobs that set variables—on a shared file system.
9. Restart LSF.

Configure a queue to support setting user variables

About this task

Any jobs submitted to the queues for setting variables must be wrapped in a script. It is recommended that you create these queues exclusively for setting variables to avoid confusion.

Procedure

1. Create a new queue in the LSF queues file `lsb.queues`. If users will be setting variables in both UNIX and Windows jobs, you will need a separate queue for each.
2. Add the variable JOB_STARTER in the queue configuration to point to the starter script shipped with Process Manager. Starter scripts are available in `JS_TOP/9.1.3.0/bin.`

   For example, for a UNIX queue:

   ```
   JOB_STARTER=JS_TOP/9.1.3.0/bin/jsstarter
   ```

   For example, for a Windows queue:

   ```
   JOB_STARTER=JS_TOP\9.1.3.0\bin\jsstarter.bat
   ```

   Ensure that the value you specify for *JS_TOP* is a fully-qualified UNC (Universal Naming Convention) name on a shared file system.
3. Run **badmin reconfig** to reconfigure LSF.

Increase the number of variables that can be substituted

Procedure

1. Stop the Process Manager Server and edit `js.conf`.
2. Add a line that specifies the maximum number of variable substitutions that can be performed in a single job definition field by specifying a value for JS_MAX_VAR_SUBSTITUTIONS For example:

   ```
   JS_MAX_VAR_SUBSTITUTIONS=20
   ```

   The default is 20 substitutions.

3. Complete the instructions for changing your configuration, saving `js.conf`, and starting Process Manager Server.

Configuration

Change the Configuration

After you have installed the basic Process Manager configuration, you may need to change a configuration value, such as adding administrators.

Change a configuration value on UNIX

Procedure

1. Log on to the Process Manager Server host as `root` or as the primary Process Manager administrator.
2. Run `jadmin stop`.
3. Edit *JS_TOP*`/conf/js.conf`.
4. Make your changes.
5. Save `js.conf`.
6. Run `jadmin start` to start the Process Manager Server and make your changes take effect.

Change a configuration value on Windows

Procedure

1. Stop the Process Manager Server service.
2. Edit *JS_TOP*`/conf/js.conf.`
3. Make your changes.
4. Save `js.conf`.
5. Start the Process Manager Server service to make your changes take effect.

Output and error file generation for work items in a flow

By default, output and error files are not generated for flows or individual work items.

To troubleshoot flows, however, it is useful to always generate output and error files for work items in the flow.

You can set output and error file generation in the Flow Attributes. The behavior to create output and error files is the same as using the LSF bsub command options `-o` and `-e`.

Output and error file settings that are defined in the Flow Attributes are inherited by the following work items in the flow:

- Jobs
- Local jobs
- Job arrays
- Static subflows
- Static flow arrays
- Dynamic subflows
- Dynamic flow arrays

Output and error file settings do not apply to job scripts, job array scripts, template jobs, or manual jobs.

Users can override output and error file settings that were defined in the flow in individual work items.

Default location of output and error files

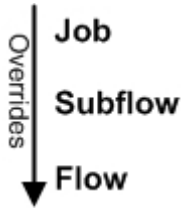
By default, output and error files are generated in the working directory of the work item.

If the working directory is not specified, the location that is used for the working directory is the execution user's home directory:

- Linux: `$HOME`
- Windows: `%HOMEDRIVE%%HOMEPATH%`

You can define a default working directory for flows with the parameter JS_DEFAULT_FLOW_WORKING_DIR in `js.conf`. Users can override the default working directory in individual work items.

Override order for output and error file generation settings



The override order for Process Manager to determine output and error file generation, location, and naming is as follows (in order of highest precedence):

1. Use output and error file settings defined at the job level, in the Job Definition.
2. Use output and error file settings defined in the static subflow's Flow Attributes.
3. Use output and error file settings defined in the dynamic subflow's Flow Attributes:
   - If **Use parent flow's settings** is selected, use settings in the parent flow's Flow Attributes.
   - If **Use inserted flow's settings** is selected, use settings in the inserted target flow's Flow Attributes.
   - If **Override parent flow's settings and inserted flow's settings** is selected, use settings in the Dynamic subflow Flow Attributes.
4. Use output and error file settings defined in the flow's Flow Attributes.

Configuring output and error file generation for work items in a flow

Procedure

1. Define a default working directory for the flow by setting JS_DEFAULT_FLOW_WORKING_DIR in `js.conf`.

   This is useful to centralize output and error file generation when no working directory is defined for the flow in the Flow Definition or with the parameter JS_FLOW_WORKING_DIR.

Refer to "JS_DEFAULT_FLOW_WORKING_DIR" on page 142 for details on requirements for the default working directory.

2. Restart the Process Manager server to make changes take effect.
3. In Flow Editor, from the menu select **Action** > **Add Flow Attribute**, and define output and error file settings.

Field	Description
Create output files for jobs and job arrays **Create error files for jobs and job arrays**	Select **Yes** to configure output and error file generation and naming pattern. **Important:** If you select to only generate output files, no error files are generated but the content of the error file is appended to the output file(same behavior as the LSF **bsub -o** option).
Directory	Specify a directory name or path relative to the flow's working directory. Process Manager creates specified subdirectories in the working directory if the directories do not exist.
File Name	Specify the naming pattern for files. Built-in variables you can use: • %u for user name • %t for time stamp • %J for job ID • %I for job array element **Note:** If you specify the file naming pattern to start with a path and use a slash (/), this is interpreted as an absolute path by Process Manager. For example: if your working directory is `/home/user1`, and you specify the file naming pattern for output files to be `/test/output/output.#{JS_FLOW_FULL_NAME}.%J`, the output file will be created outside of the working directory in the directory `/test/output`, not within the working directory. Default file naming pattern for output files: • Job: `output.#{JS_FLOW_FULL_NAME}.%J` • Local job: `output.#{JS_FLOW_FULL_NAME}` • Job array element: `output.#{JS_FLOW_FULL_NAME}.%J[%I]` Default file naming pattern for error files: • Job: `error.#{JS_FLOW_FULL_NAME}.%J` • Local job: `error.#{JS_FLOW_FULL_NAME}` • Job array element: `error.#{JS_FLOW_FULL_NAME}.%J[%I]`

4. Click **OK** to save your changes.

Define a default working directory for flows

You can define a default working directory for flows with the parameter JS_DEFAULT_FLOW_WORKING_DIR in `js.conf`. The default working directory is used when no working directory is defined in the flow definition or passed to Process Manager with the variable JS_FLOW_WORKING_DIR.

Work items inherit the flow settings but users can override the default working directory in individual work items.

Configure an alarm

About this task

An alarm is used to send a notification when an exception occurs. The alarm definition specifies how a notification should be sent if an exception occurs. When a user defines a flow to schedule work, they can select an alarm to open if an exception occurs. They select an alarm from a configured list of alarms. Alarms are configured by the Process Manager administrator.

Alarms are stored in *JS_TOP*/work/alarms. Each alarm is in a separate file named *alarm_name*.alarm. The file name and its contents are case-sensitive. Each alarm can either notify one or more email addresses, or execute a script.

The alarm file contains the following parameters:

```
DESCRIPTION=<description>
NOTIFICATION=command_name[command_parameters]
```

Any alarm files with an invalid alarm definition will not be registered. Any extra unrecognized parameters are ignored, but the alarm will still be registered.

Procedure

1. As the Process Manager administrator, create a new file in *JS_TOP*/work/alarms. Specify a name for the file that is a meaningful name for the alarm, with a file suffix of alarm. For example:

   ```
   DBError.alarm
   ```

   The name you specify will appear in the Flow Editor in the list of available alarms.
2. Optional. Specify a meaningful description for the alarm. For example:

   ```
   DESCRIPTION=Send DBA a message indicating DBMS failure
   ```
3. Required. Specify the alarm type and definition.
   - Email notification

     ```
     NOTIFICATION=Email[user_name ...]
     ```

     Specify the "**Email**" command, followed by a space-delimited list of email addresses to notify regarding the exception. Specify the complete email address, or just the user name if JS_MAILHOST was defined in js.conf. For example:

     ```
     NOTIFICATION=Email[bsmith ajones]
     ```

     You must specify a valid notification statement with at least one email address, or the alarm is not valid.
   - Script execution

     ```
     NOTIFICATION=CMD[/file_path/script_file user_variable ...]
     ```

     Specify the "**CMD**" command, followed by the path to the script file and any user variables (such as the error code). For example:

     ```
     NOTIFICATION=CMD[/home/admin/pageadmin.sh #{ERRORCODE}]
     ```

     Variable values cannot contain the backquote character (').
4. To enable the alarm, reload the alarm list using the following command:

   ```
   jreconfigalarm
   ```

Specify the mail host

About this task

The mail host parameter in `js.conf` defines the type of email server used and the name of the email host. This information is important for receiving email notifications from the Process Manager Server.

Procedure

1. Stop the Process Manager Server and edit `js.conf`.
2. If the parameter JS_MAILHOST is already defined, change the value to specify the new email host. Otherwise, add a line that specifies the type of mail host and the name of the mail server host. For an SMTP mail host, specify SMTP:*hostname* as shown:

   ```
   JS_MAILHOST=SMTP:barney
   ```

   For an Exchange mail host, specify Exchange:*hostname*, as shown:

   ```
   JS_MAILHOST=Exchange:fred
   ```

   The default is SMTP on the local host.
3. Complete the instructions for changing your configuration, saving `js.conf` and starting the Process Manager Server.

Change the job start retry value

About this task

The job start retry value controls the number of times that the Process Manager Server tries to start a job or job array before it raises a Start Failed exception.

Procedure

1. Stop the Process Manager Server and edit `js.conf`.
2. If the parameter JS_START_RETRY is already defined, change the value to specify the new number of retry times. Otherwise, add a line like the following to the file:

   ```
   JS_START_RETRY=n
   ```

   where *n* is the number of times to retry starting a job or job array before raising a Start Failed exception.
3. Complete the instructions for changing your configuration, saving js.conf and starting the Process Manager Server.

Calendars

Create system calendars

Process Manager uses system calendars to share scheduling expressions that are commonly used. System calendars are created by the Process Manager administrator, and are owned by the virtual user `Sys`. They can be viewed and referenced by everyone. Each system calendar is stored as an individual file in *JS_TOP*`/work/calendars`—one calendar per file. You create a calendar using the Calendar Editor, then save it as a system calendar.

Calendar names

About this task

When you create a calendar, you need to save it with a unique name. Some rules apply:

- Calendar names can contain the digits 0 to 9, the characters a to z and A to Z, underscore (_), and dash (-)
- Calendar names cannot begin with a number
- System calendars are named as follows:

calendar_name@Sys

Procedure

1. Using the Calendar Editor, create the calendar and save it. The calendar will be saved with your own user ID as the owner. For instructions on using the Calendar Editor, see *Using Process Manager*, or the Calendar Editor online help.
2. In *JS_TOP*/work/calendars, locate the calendar you created. Change the owner of the calendar by editing the file and changing the owner from your user ID to Sys. Refer to the following example, where the owner is highlighted:

```
random
(2002/5/25,2002/6/16,2002/6/2,2002/6/3)
bhorner
random
1022181937
```

3. Rename the file or save the file with a new name. Ensure the suffix of the calendar is Sys.
4. If applicable, delete the original calendar you created.

Update the Holidays@Sys calendar

Procedure

1. Open the Holidays@Sys calendar.
2. Save the calendar with a new name.
3. Edit the list of dates to include all those dates that are company-wide holidays.
4. In *JS_TOP*/work/calendars, locate the calendar you created. Change the owner of the calendar by editing the file and changing the owner from your user ID to Sys. Refer to the following example, where the owner is highlighted:

```
random
(2002/5/25,2002/6/16,2002/6/2,2002/6/3)
bhorner
random
1022181937
```

5. Delete the original Holidays@Sys calendar.
6. Rename the file to Holidays@Sys. Ensure the suffix of the calendar is Sys.

Delete a calendar

About this task

Periodically, you or a user may need to delete a calendar. This can be done from the Calendar Editor, or by using the **jcdel** command.

You cannot delete a calendar that is currently in use by a flow definition, flow, or another calendar. A calendar is in use under the following conditions:

- If a flow definition is triggered by a time event that uses the calendar, or uses a calendar that references this calendar
- If a flow is running, and contains a time event that uses the calendar or uses a calendar that references this calendar
- If another calendar references this calendar to build a schedule statement

  You can temporarily delete a system calendar—installing a new version of Process Manager Server reinstalls the system calendars that come with Process Manager.

Procedure

1. Stop Process Manager Server.
2. In *JS_TOP*/work/calendars, locate the calendar you want to delete.
3. Delete the file from the calendars directory.
4. Restart the Process Manager to have the change take effect.

Local Jobs

About local jobs on Linux and UNIX

You can include a local job in the flow diagram.

A local job is a job that will execute immediately on the Process Manager host without going through LSF. A local job is usually a short and small job. It is not recommended to run long, computational-intensive or data-intensive local jobs as it can overload the Process Manager host.

A local job is non-blocking: that is, several local jobs can run in parallel.

Controlling a local job

You can kill a local job in the same way as you kill any other job. The local job may also be killed as a result of the flow being killed.

If you suspend or resume a flow that contains local jobs, the local jobs will also be suspended or resumed.

In some cases, you may not want to suspend a local job when the flow is suspended. You can select **Disable suspension for this job** in the Job Definition. If job suspension is disabled, and the job is running when the flow is suspended, the job will not be suspended. The job will continue to run.

The following signals are sent to the local job:

- Kill—The system sends SIGINT, waits for 10 seconds, SIGTERM, waits for 10 seconds, then SIGKILL. The 10 second delay between signals allows you to catch the signal and perform any cleanup required by the job before it is terminated.

- Suspend—The system sends SIGSTOP.
- Resume—The system sends SIGCONT.

In the job's runtime attributes, you can view the exit status and CPU usage of a local job after the job completes. The process ID identifies the local job and you can view CPU usage for the job. You can also view the process ID of the job and CPU usage information with `jflows -l` *`flow_id`* and `jhist -C job`.

Parameters related to local jobs

By default, a local job can run indefinitely, it does not have a timeout. To define a timeout value for a local job so that it will be killed if it was running for too long, use the parameter JS_LOCAL_EXECUTION_TIMEOUT in `js.conf`.

To avoid overloading the Process Manager host with too many local jobs, the parameter JS_LOCAL_JOBS_LIMIT in `js.conf` controls the maximum number of local jobs that can run concurrently on the Process Manager host.

For security reasons, you may want to disable local jobs altogether. You can disable local jobs by setting the parameter `JS_LOCAL_JOBS_LIMIT=0` in `js.conf`.

jfd and eem.local

To monitor local jobs, `jfd` communicates with `eem.local`. This binary is started by jfd, handles job submission, control, and status checking for local jobs, and reports back to `jfd`.

`jfd` listens on the port number JS_PORT + 1 to receive status updates from `eem.local`, and `eem.local` listens on port number JS_PORT + 2 . The parameter JS_PORT is defined in `js.conf`.

Should `jfd` terminate abnormally, when it restarts it can recover running and finished local jobs and determine their status and resource usage.

About local jobs on Windows

You can include a local job in the flow diagram.

A local job is a job that will execute immediately on the Process Manager host without going through LSF. A local job is usually a short and small job. It is not recommended to run long, computational-intensive or data-intensive local jobs as it can overload the Process Manager host.

A local job is blocking: each local job has its own thread for execution, but the dedicated local job thread will not be freed up to execute another local job until the local job that is executing has completed.

Controlling a local job

You cannot directly kill a local job in the same way as you kill any other job. The local job can only be killed as a result of the flow being killed, or if it runs for longer than the configured timeout value.

If you suspend or resume a flow that contains local jobs, the local jobs will be killed and rerun.

You can view a local job's runtime attributes in Flow Manager. Note, however, that no resource usage is a available for the local job.

Parameters related to local jobs

By default, a local job has a timeout so that it will be killed if it was running for too long. The parameter JS_LOCAL_EXECUTION_TIMEOUT in `js.conf` defines how long a local job is allowed to run before it is killed by the system.

For security reasons, you may want to disable local jobs altogether. You can disable local jobs by setting the parameter `JS_LOCAL_JOBS_LIMIT=0` in `js.conf`.

History

Change the history setting

About this task

History information is stored in a history log file. Data is added to this file for either a set period of time after a flow has completed, or when the history log file reaches a certain size. By default, these values are set to 24 hours or 500 KB, whichever occurs first. You can change these values after installation. After the set amount of time has elapsed, or the file reaches the specified size, a new history log file is created. The previous file remains in the log directory until you archive it or delete it.

Procedure

1. Follow the instructions in "Changing the Configuration" to stop the Process Manager Server and edit `js.conf`.
2. Locate the following parameters in the file:

   ```
   # JS_HISTORY_LIFETIME=24 # JS_HISTORY_SIZE=500000
   ```

   and change them as follows:
   a. Delete the comment symbol (#) from the lines you want to change.
   b. Change the JS_HISTORY_LIFETIME value to the maximum number of hours of data you want to keep in each file.
   c. Change the JS_HISTORY_SIZE value to the maximum number of bytes of data you want to keep before creating a new file.

      Historical data will be kept in the current log file until either the size limit or the time limit is reached, whichever is reached first.
3. Complete the instructions for changing your configuration, saving `js.conf` and starting the Process Manager Server.

View History

You can see the history of a work item, which shows details about when and how the item was run, by using the Flow Manager or **`jhist`**.

When you use the **`jhist`** command with no time interval specified, you see data for the past seven days.

View the history of a flow definition

For a flow definition, you can see the following information:

- If and when it was submitted

- If and when it was submitted to run immediately
- If and when it was removed from Process Manager
- If and when it was placed on hold or released
- If and when it was triggered by an event
- If and when a flow was created, and any IDs of those flows
- Time zone information for Process Manager Client

From the command line

From the command line, run:

%jhist -C flowdef -f *flow_definition_name*

where *flow_name* is the name of the flow definition whose history you want to display.

View the history of a flow

For a flow, you can see the following information:

- When it started
- If and when it was killed
- If and when it was suspended
- If and when it was resumed
- When it completed
- Time zone information for Process Manager Client

From the command line

From the command line, run:

%jhist -C flow -i *flow_id*

where *flow_id* is the unique ID of the flow whose history you want to display.

View the history of a job or job array

For a job or job array, you can see the following information:

- The user name
- The ID of the flow in which it ran
- The job name
- The job ID
- The state of the job
- The status of the job
- When the job started
- When the job completed
- The CPU usage of the job
- The memory usage of the job
- Time zone information for Process Manager Client

From the command line

From the command line, run:

%jhist -C job -j *job_name*

where *job_name* is the name of the job or job array.

Troubleshooting

Process Manager daemon cannot restart—port is in use

The problem:

If LSF is down, and the Process Manager daemon is killed or goes down before LSF comes back up, it is possible that one or more jobs were in the process of being submitted before the Process Manager Server went down. The processes for these jobs may be using the port the Process Manager daemon used before it went down.

The solution:

Search for the bsub process of any job that Process Manager was trying to submit and kill it. The job will be resubmitted when the Process Manager Server restarts.

Overrun exception triggers at incorrect time

The problem

An overrun exception is to trigger if a job runs longer than a specified number of minutes, for example 10 minutes. The overrun exception is flagged when the job runs for 9 minutes.

The solution

The clock on the machine used to determine the start time of the job, and the clock on the machine on which the job is running are out of synchronization. Either adjust the overrun time to account for clock discrepancies, or synchronize the clocks on all machines.

After deleting a calendar, user cannot find flow

The problem

The user deleted a calendar that was used, either to trigger a flow or to trigger a job within a flow. Then the Process Manager Server was restarted. After the Server restarts, the user cannot find the flow in the Flow Manager.

The solution

Upon restart of the Process Manager Server, the flow is no longer associated with its flow definition in the Flow Manager. This is because the flow definition has an error. The flow now resides in the *JS_TOP*/work/storage/error directory.

Unable to run GUI on linux 2.2 through XTERM

The problem

This problem is related to JRE defect #4466587. If the stack size is less than a certain limit on some linux platforms, a segmentation fault occurs.

The solution

Increase the stack size to at least 2048. For tcsh or csh:

limit stacksize 2048

For bash:

ulimit -s 2048

Not all user variables are replaced

The problem

The user specified more than the configured maximum number of user variables that can be substituted in a single field.

The solution

Increase the value for `JS_MAX_VAR_SUBSTITUTIONS` in `js.conf`.

User is unable to trigger their own flow

The problem

On Windows, if a user submits a flow under a user ID that is specified in one case, but logs in to Flow Manager with the same user ID typed in a different case, the Process Manager Server does not recognize the two user IDs as the same. The user cannot trigger the flow.

For example, when John creates a flow, he is logged in as jdoe. When he logs into Flow Manager to trigger the flow, he logs in as JDOE. To the Process Manager Server, he is not authorized to trigger this flow because it is not his.

The solution

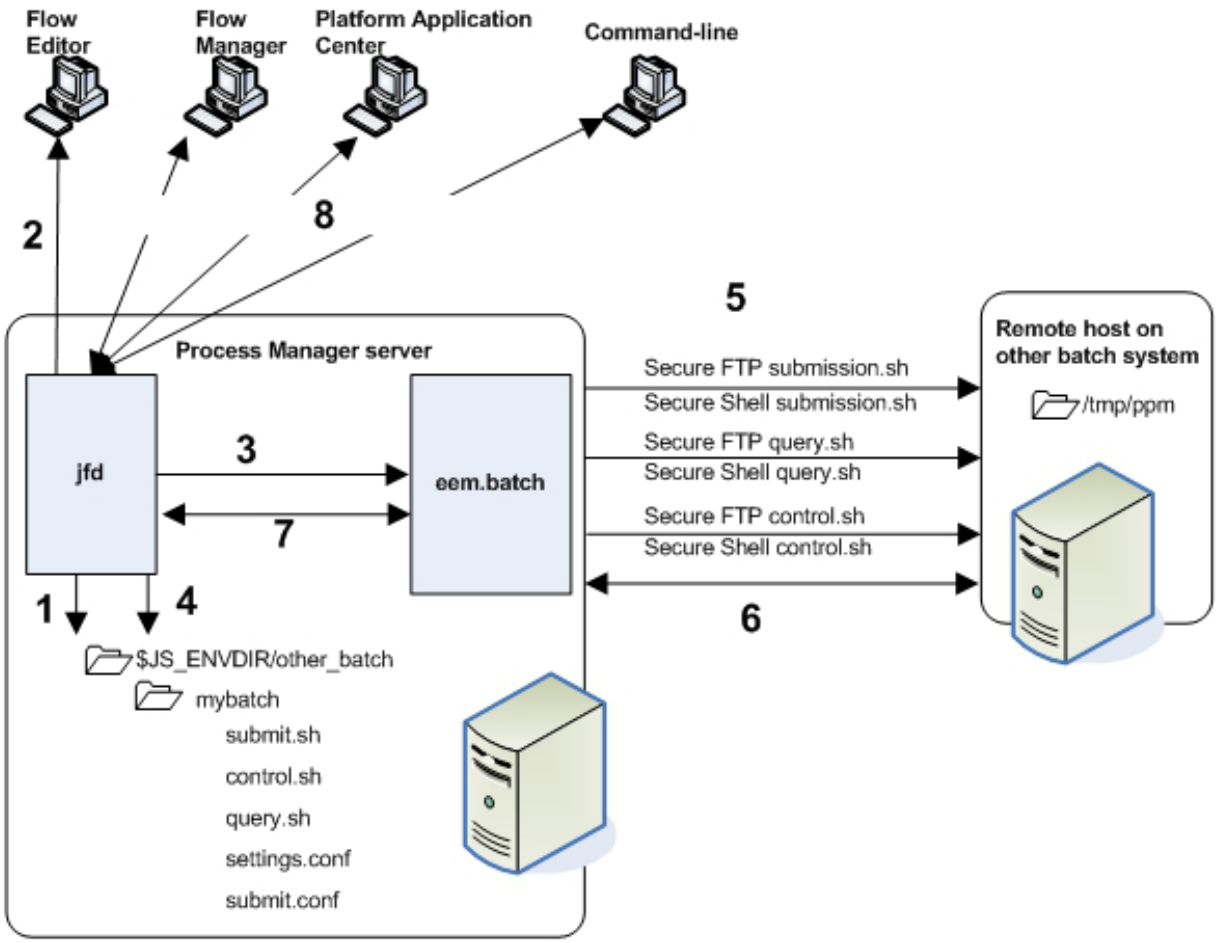
A Windows user must always log in using the same case. The following are seen as different users:

- jdoe
- Jdoe
- JDOE

Chapter 4. Using Process Manager with Other Batch Systems

In your flow, you may have jobs that you need to run on remote batch systems or workload managers that are not LSF. Process Manager can be configured by the administrator to communicate with the Other Batch System so that users can add a job in their flow and submit a job to the Other Batch System, and track and control the job like any other job in their flow. The Job Definition for Other Batch jobs can be customized by the administrator.

How Process Manager works with Other Batch Systems



1. When `jfd` starts up, it scans the `$JS_ENVDIR/other_batch` directory for any configured batch systems and makes them available in Flow Editor.

   `jfd` starts up one `eem.batch` for each configured batch system.

   The Other Batch Job work item in Flow Editor is now enabled. 

2. In Flow Editor, the user selects the Other Batch Job work item and adds it to their flow.

   In the Job Definition, the user indicates the command to run, other job submission options, and the user account under which the job is to run: the same user as on the local system or a specific user on the Other Batch System.
3. `eem.batch` handles job submission, control, and status checking for jobs submitted to the specific batch system, and reports back to `jfd`.
4. To connect to the Other Batch System, `jfd` uses the file `settings.conf` located in the subdirectory for the specific batch system under `$JS_ENVDIR/other_batch`.

   The `settings.conf` file indicates which host on the Other Batch System to connect to, the Other Batch System administrator account with which to connect for job querying, and the temporary directory to use on the Other Batch System.`jfd` uses Secure Shell(SSH) to connect to the Other Batch System.
5. For job submission, control, and status checking, `jfd` uses the configured bash shell scripts `submit.sh`, `control.sh`, and `query.sh` and populates the environment variables in these scripts with the correct values for the Other Batch System.

   As required, `jfd` uses SSH to securely copy `submit.sh`,`control.sh`, and `query.sh` to the temporary directory, and to execute them. `jfd` creates temporary submission, control, and query scripts in the temporary directory.

   `jfd` creates a `ppm` subdirectory. All temporary job submission, control, and query scripts are stored under `/tmp/ppm`.
6. `eem.batch` queries the remote host on the Other Batch System for job status updates.
7. `jfd` listens on the port number JS_PORT + 1 to receive status updates from `eem.batch`.
8. The user can view the status of the Other Batch job through Flow Manager, the Process Manager command-line, or Platform Application Center.

About Other Batch Jobs

Limitations

Other Batch jobs are only supported when the Process Manager Server is on UNIX/Linux.

Job Definition

When Process Manager is configured to communicate with the Other Batch System, you will see the Other Batch Job work item enabled in Flow Editor:

In the Job Definition, you specify the command to run, other job submission options, and the user account under which the job is to run in the Other Batch System.

Job monitoring and control

You monitor an Other Batch job in the same way as you monitor any other job. In the job's runtime attributes, you can view the same job information that you can view for any LSF job.

The following actions can be taken on an Other Batch job:

- Kill: You can kill Other Batch jobs in the same way as you kill any other job. The job may also be killed as a result of the flow being killed. Note that the state of the job will not change until the job is actually killed in the Other Batch System. When you kill a flow that contains Other Batch jobs, the state of the flow immediately changes, but the state of the Other Batch job does not change until the job is actually killed in the Other Batch System.
- Suspend: If you suspend a flow that contains Other Batch jobs, Other Batch jobs will also be suspended. When you suspend a flow that contains Other Batch jobs, the state of the flow immediately changes, but the state of the Other Batch job does not change until the job is actually suspended in the Other Batch System.
- Resume: If you resume a flow that contains Other Batch jobs, Other Batch System jobs will also be resumed. When you resume a flow that contains Other Batch jobs, the state of the flow immediately changes, but the state of the Other Batch job does not change until the job is actually resumed in the Other Batch System.

It is possible that jobs submitted to different batch systems have the same job ID. This is not a problem because `jfd` distinguishes jobs by job name.

Dependencies

The dependency types coming out of an Other Batch job are:

- **Completes successfully**: The job completes with exit code 0. If a job state is Done, it is considered as "Completes Successfully", otherwise it is considered as "Fails".
- **Fails**: The job fails.
- **Ends with any exit code**: The job exits with any exit code, including 0.
- **Ends with exit code**: The job exits with a particular exit code pattern. For example, not-equal-to, equal-to.

Failover and Other Batch jobs

Should `jfd` terminate abnormally, when it restarts it can recover running and finished Other Batch jobs and determine their status and resource usage.

If `jfd` is shut down normally, or if `jfd` terminates abnormally:

- If the Other Batch job is still running when `jfd` is restarted, `jfd` can recover the job as long as `query.sh` returns the correct job status from the Other Batch System.
- If the Other Batch job has finished(either normally or abnormally) when `jfd` is restarted, `jfd` can recover the exit status and resource usage of the job as long as `query.sh` returns the correct job status from the Other Batch System.

If `eem.batch` terminates abnormally, it will be restarted by `jfd`.

Configuring Process Manager to work with Other Batch Systems

Step Summary and Configuration Checklist

Before you begin, take a few moments to gather the information you will need for configuration.

Step Summary	Category	What you need	Description
Prerequisites	Prerequisites	Port number JS_PORT + 1 must be free	For each configured batch system, an `eem.batch` binary is started by `jfd`. `jfd` listens on the port number JS_PORT + 1 to receive status updates from `eem.batch`. The parameter JS_PORT is defined in `js.conf`.
"1. Configure password-less SSH connections" on page 59	User accounts	Process Manager administrator account	User name of the Process Manager administrator account. You need this information to set up password-less SSH between the Process Manager administrator account and the Other Batch System administrator account.
	User accounts	Other Batch System administrator account	User name of the Other Batch System administrator account. You need this information to set up password-less SSH between the Process Manager administrator account and the Other Batch System administrator account. This account is used to execute all query commands on the Other Batch System. This account must have read/write/execute access to the temporary directory on the host of the Other Batch System specified with JS_EE_HOST in your `settings.conf` file.
	User accounts	Other Batch System user accounts	User names of the accounts that will be used to submit jobs to the Other Batch System. Jobs will also run under this user account. You need this information to set up password-less SSH between the Process Manager regular user accounts and the Other Batch System user accounts. These accounts must have read/write/execute access to the temporary directory on the host of the Other Batch System specified with JS_EE_HOST in your `settings.conf` file. When a user creates an Other Batch job in Flow Editor, the user is required to specify the user account under which to run the job. He can specify either to run under his own user account on the Other Batch System, or under a different user account.

Step Summary	Category	What you need	Description
"2. Enable another Batch System" on page 60	Configuration files and scripts	Example configuration files and scripts	There are ready-to-use configuration files and submission scripts for IBM LoadLeveler® and Open Grid Scheduler/Grid Engine in `$JS_TOP/$JS_VERSION/examples/conf/other_batch`. You will need to copy these files to a subdirectory of `$JS_ENVDIR/other_batch`.
"3. Configure connection to the Other Batch System" on page 60	Host name	Host name of the Other Batch System	Host name or IP address of a host on the Other Batch System from which you can submit/control/query jobs. All job commands will be run from this host on the Other Batch System. You will need this information to specify JS_EE_HOST in your `settings.conf` file.
	Temporary directory location	Temporary directory on the host of the Other Batch System	Temporary directory location on the other host on which you will be able to store the temporary submission, control, and query scripts. You will need this information to specify JS_EE_TMP_DIR in your `settings.conf` file.
	User accounts	Other Batch System administrator account	User name of the Other Batch System administrator account. You need this information to specify JS_EE_USER in your `settings.conf` file.
"4. Customize job submission, control, and query scripts" on page 61			
"5. Restart the Process Manager Server" on page 64			
"6.Test the Other Batch System" on page 65			

1. Configure password-less SSH connections

In order for Process Manager to operate on jobs in the Other Batch System, you need to set up password-less SSH connections for administrator and regular user accounts.

Set up password-less SSH for administrator accounts

Procedure

1. Configure SSH Public and Private keys between the Process Manager administrator on the Process Manager server and the administrator of the Other Batch System on the remote host so that no passwords or passphrases are required.

   This is required because the administrator account of the Other Batch System is used to run job query commands on the Other Batch System.
2. Ensure that the Other Batch System administrator account has read/write/execute permission on the temporary directory on the Other Batch System host.

Set up password-less SSH for regular user accounts

Procedure

1. Configure SSH Public and Private keys between Process Manager user accounts on the Process Manager server, and the user accounts on the Other Batch System so that no passwords or passphrases are required.

   This is required because when a job is submitted, it can run under the user account which submitted the job or as a different user account indicated in the Job Definition.
2. Ensure that the Other Batch System user accounts have read/write/execute permission on the temporary directory on the Other Batch System host.

2. Enable another Batch System

About this task

In order to be able to submit jobs to a batch system other than LSF, you need to enable it in Process Manager so it can be selected by the user in the Job Definition. All valid batch systems are listed in Flow Editor, in the Job Definition, under the **General** tab, **Select the Batch System**, **Name** .

There are ready-to-use configuration files and submission scripts for IBM LoadLeveler and Open Grid Scheduler/Grid Engine in `$JS_TOP/$JS_VERSION/examples/conf/other_batch`.

Procedure

1. On the Process Manager server host, create a subdirectory under`$JS_ENVDIR/other_batch`.

   Important: The name of the subdirectory you create becomes the identifier of the batch system and will be displayed in the Job Definition and as the job type when monitoring jobs in flows.

   For example, to configure a batch system called `mybatch`, create the directory `$LSF_ENVDIR/other_batch/mybatch`.
2. If you are using IBM LoadLeveler or Open Grid Scheduler/Grid Engine, copy the example files provided for your batch system from `$JS_TOP/$JS_VERSION/examples/conf/other_batch` to your directory. If you are using a batch system other than IBM LoadLeveler or Open Grid Scheduler/Engine, copy the example files from one of the directories provided for IBM LoadLeveler or Open Grid Scheduler/Grid Engine as a starting point.

   You will need `control.sh`, `submit.sh`, `query.sh`, `settings.conf`, and `submit.conf`.

3. Configure connection to the Other Batch System

Procedure

1. With a text editor, open the `settings.conf` file in the subdirectory you created under `$JS_ENVDIR/other_batch`.
2. Specify JS_EE_HOST, JS_EE_USER, and JS_EE_TMP_DIR.

   These are required parameters.
3. Save the file.

4. Customize job submission, control, and query scripts

There are three files to map job submission, control, and query commands and options to the Other Batch System: `submit.sh`, `control.sh`, and `query.sh`. `jfd` modifies these scripts at runtime to set environment variables, then copies them over to the temporary directory on the Other Batch System host, where they are executed.

If you are using IBM LoadLeveler or Open Grid Scheduler/Grid Engine, there are ready-to-go scripts already provided in the `$JS_TOP/$JS_VERSION/examples/conf/other_batch` directory.

If you are using a different batch system than IBM LoadLeveler or Open Grid Scheduler/Grid Engine, you will need to modify these files and map job submission, control, and query commands for your specific batch system.

The scripts must be bash shell scripts.

submit.sh

Description	Input	Output	Exit Code

Job submission command and options for the specific batch system. The script is executed on the Other Batch System host to submit jobs.
 	
If you require additional submission options from the ones that are provided by default, you can list additional options in the configuration file `submit.conf`.
 	
Runs as the user account defined in the Job Definition: the user account who submitted the job, or the user account specified in the Job Definition.
 	
Each submission option in the script has an associated environment variable that is passed to the submission script.
 	
Default job submission options exposed in the Job Definition are:
• Command to run the job (required)
• Job name (required)
• Environment variables to be set for the job(optional)
 	
Note that the user is required to provide values for required options.
	Environment variables
	
	`$JS_EE_SUBMISSION_JOB_COMMAND(required)`
	
	`$JS_EE_SUBMISSION_JOB_NAME(required)`
	
	`$JS_EE_SUBMISSION_JOB_ENV_VARS(optional)`
	
	Additional custom environment variables specified in `submit.conf`, if used.
		On Success: Job ID
		
		On Error: Error messages if applicable
			Zero on success.
			
			Non-zero on failure. Error messages must be printed to standard error

submit.conf

Customized job submission options that are displayed in Flow Editor in the Job Definition.

The options listed in this file are displayed in addition to the default job submission options.

Note that after defining the environment variables in `submit.conf`, you will need to modify `submit.sh` to map the environment variables to actual options in the submit.sh file. You will need to add the new options to `submit.sh`.

Only labels and text fields (text strings) are supported as customized submission options. No type checking is enforced for the input.

Each line must contain three fields: Label, Environment Variable, and Required(1 indicates required, 0 optional). Lines that start with # are ignored.

When a user is creating a Job Definition, Flow Editor checks the value of the required fields. If any required field is empty, the Job Definition is not complete and the user will not be able to submit the flow. During job submission, `jfd` checks the value of the required fields. If a required field value is empty, job submission fails.

Example `submit.conf` file:

```
#Label                      #Environment Variable          #Required
"Submit to queue"           JS_EE_SUBMISSION_QUEUE_NAME         0
"Run on host"               JS_EE_SUBMISSION_HOST_NAME          0
"Resource requirement"      JS_EE_SUBMISSION_RES_REQ            0
```

control.sh

Description	Input	Output	Exit Code
Job control options for the specific batch system: kill, suspend, and resume. Runs as the user account defined in the Job Definition: the user account who submitted the job, or the user account specified in the Job Definition. The script takes two arguments: job control action and job ID: 1. Job control action. Valid actions: KILL, SUSPEND, RESUME. 2. ID of the job to control. A valid job ID is a positive integer. **Note:** The job control script does not support controlling multiple jobs at the same time.	Command-line arguments: $1: Job control actions: KILL, SUSPEND, RESUME(required) $2: ID of the job to control(required)	On Success: Not required On Error: Error messages if applicable	Zero on success. Non-zero on failure. Error messages must be printed to standard error

query.sh

File	Description	Input	Output	Exit Code
`query.sh`	Job query script executed on the Other Batch System to retrieve the status of jobs. Runs as the Other Batch System administrator account to query all jobs submitted to the Other Batch System. The `query.sh` script is not required to print out the status of all jobs specified on the command-line argument. If a requested job status is not printed out, the status of that job is assumed to be unchanged by `jfd`. For example, if `query.sh` has an input of job IDs 1, 2, and 3, and it only prints the status records for job 1 and job 2, `jfd` assumes that the status of job 3 has not changed.	Command-line arguments: $1: Space-separated job IDs(required)	On Success: A list of job status records On Error: Error messages if applicable	Zero on success. Non-zero on failure. Error messages must be printed to standard error

Job status records must be printed in the following format:

- Each job status record must start with `BEGIN`, and end with `END`, with name-value pairs in between.
- Only JOB_ID and JOB_STATE are required. Other names, if no values exist, do not need to be listed.
- `jfd` parses the output of `query.sh` record by record. If any name-value pair is not valid, it will be ignored. If any record does not contain the required name-value pairs, it will be ignored.

Format:

BEGIN

JOB_ID=

JOB_STATE=

JOB_EXIT_STATUS=

CPU_TIME=

DETAIL=

EXEC_HOST=

END

...

Valid names are:

- JOB_ID: Required. A valid job ID is a positive integer.
- JOB_STATE: Required. A valid job state is one of the following: PENDING, RUNNING, SUSPENDED, DONE and EXIT.
- JOB_EXIT_STATUS: A valid job exit status is an integer from 0 to 255. Required when JOB_STATE is DONE or EXIT.
- CPU_TIME: A valid CPU time is a non-negative floating-point number. Only read and checked by `jfd` when JOB_STATE is DONE or EXIT.
- DETAIL: Optional. String with additional information to display in the job runtime attributes. You can use the DETAIL string is to provide additional information about a job status that is specific to a batch system. For example, a job in the Other Batch System might be in a PENDING state because it is on hold. In this case, the DETAIL string can say "On Hold".
- EXEC_HOST: Host on which the job is running.

Example output of a query:

```
username@tt-jj-194: /tmp/query.sh 174 172 171 176
BEGIN
JOB_ID=171
JOB_STATE=DONE
JOB_EXIT_STATUS=0
CPU_TIME=0.073
DETAIL=
EXEC_HOST=hostA
END
BEGIN
JOB_ID=172
JOB_STATE=EXIT
JOB_EXIT_STATUS=137
CPU_TIME=0.088
DETAIL=100 : after job
EXEC_HOST=hostB
END
BEGIN
JOB_ID=174
JOB_STATE=SUSPENDED
END
BEGIN
JOB_ID=176
JOB_STATE=PENDING
END
```

5. Restart the Process Manager Server

Restart the Process Manager Server to make your changes take effect.

Procedure

1. Log on to the Process Manager Server as root.
2. Set your environment.
   - On csh or tcsh:

     ```
     source JS_TOP/conf/cshrc.js
     ```
   - On sh, ksh or bash:

     ```
     . JS_TOP/conf/profile.js
     ```
3. Run jadmin to restart the Process Manager Server:

   ```
   jadmin stop
   jadmin start
   ```

6.Test the Other Batch System

Procedure

1. In Flow Editor, create a new flow definition

   You should be able to see the Other Batch System icon enabled.

2. Select the **Other Batch System Job** icon and drop it into your flow.
3. Right-click and choose **Open Job Definition**.

   In the **General** tab, you should be able to see your configured batch system in the list under **Select the batch system**, **Name**.
4. Specify the required fields and save the job definition.
5. Submit your flow definition.
6. In Flow Manager, trigger a flow from the job definition.

   Monitor the job and see it run on the Other Batch System.

Configure Data Transfer to and from the Other Batch System

Before running a job on the Other Batch System, you may need to transfer data from the local system to the Other Batch System as input to the job.

About this task

When the job completes, you may also need to transfer the standard output/error from the Other Batch System back to the local system.

To do this, you can configure submission options for input, output and error files, and create one local job in your flow definition that precedes the Other Batch job and another local job that follows the Other Batch job to handle input and output files.

Procedure

1. In your `submit.conf` file, specify standard input, output, and error as customized options to the Job Definition.

   For example:

```
#Label            #Environment Variable              #Required
"Input File"      JS_EE_SUBMISSION_STDIN             0
"Output File"     JS_EE_SUBMISSION_STDOUT            0
"Error File"      JS_EE_SUBMISSION_STDERR            0
```

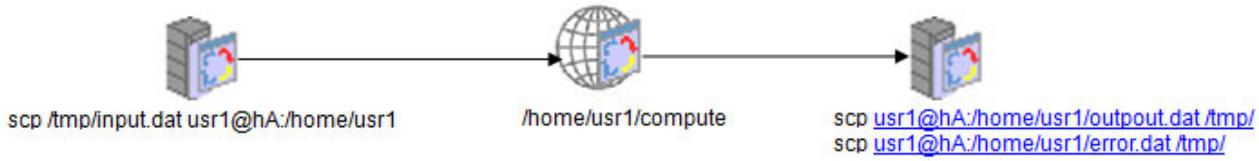
2. Edit your `submit.sh` script file so that jobs are submitted with the appropriate input, output, and error file options for your specific batch system.

   For example, -i JS_EE_SUBMISSION_STDIN, –o $JS_EE_SUBMISSION_STDOUT, –e $JS_EE_SUBMISSION_ERR.
3. In Flow Editor, in your flow definition, define a local job immediately before and immediately after your Other Batch job.

   The local job that directly precedes your Other Batch job copies the local data to the Other Batch System.

   The local job that directly follows your Other Batch job copies the output and error data from the Other Batch System to the local system.

For example:



4. In the Job Definition of the Other Batch job, ensure the correct path to the Other Batch System is specified.

   For example:

   - Input file: `/home/usr1/input.dat`
   - Output file: `/home/usr1/output.dat`
   - Error file: `/home/usr1/error.dat`

Troubleshooting Other Batch System Jobs

Error type	Where it is logged
SSH connection times out	The error is logged in history for the job under job submission and control actions, with a message that connection has timed out. You can access the history through Flow Manager, the **jhist** command, or Platform Application Center.
SSH connection successful, but submission and control actions fail on the Other Batch System	The error is logged in history for the job. For job submission, the error message from the standard error output of the `submit.sh` script is logged in history. For job control, the error message from the standard error output of the `query.sh` script is logged in history. You can access the history with the **jhist** command.
Job status query fails from `jfd` to `eem.batch`.	If the job status query fails for any reason, LOG_DEBUG level error messages are logged in the `$JS_LOGDIR/log/jfd.log.`*`host_name`* file.
Error and debug messages for `eem.batch`	Error and debug messages for the `eem.batch` of each configured batch system are logged in `$JS_LOGDIR/log/eem.otherbatch.log.`*`batch_system_name`*. The batch system name is the directory name for that batch system under `$JS_ENVDIR/other_batch`.

Chapter 5. Mainframe support

Process Manager with IBM® z/OS® mainframe support allows you to dispatch jobs to a mainframe and monitor their progress using FTP (file transfer protocol) technology on Microsoft® Windows® or UNIX.

z/OS is an operating system for IBM's zSeries mainframes.

For more information about z/OS, see IBM's z/OS website: http://www-03.ibm.com/servers/eserver/zseries/zos/.

How does it work?

The Process Manager daemon (the jfd) supports mainframe by submitting an LSF proxy job which controls the FTP to the mainframe host. The LSF proxy job (through FTP) submits, monitors, and retrieves the output of the mainframe job. This means that mainframe jobs specify both mainframe and LSF details.

Requirements

- A valid z/OS mainframe user ID

Limitations

- z/OS does not support suspending or resuming jobs
- Job arrays for mainframe jobs are not supported
- On Windows, if you want to be able to kill a mainframe job, you must submit the job to a queue set up specifically for that purpose.

Configure for Mainframe

About this task

To use the mainframe support, you must:

Procedure

1. Copy the template file z/OS_Template.xml from JS_TOP/9.1.3.0/examples to JS_TOP/work/templates.
2. Edit `zos.conf` with your customized settings. The `zos.conf` file contains all the information you need to configure your settings for the FTP environment you are using.

Results

The status of mainframe jobs is displayed in Flow Manager.

Killing a job (Windows only)

For a user to be able to kill a job in a Windows environment, the Administrator must create a queue. For jobs to be eligible to be killed, they must be submitted by the user to that queue.

In `lsb.queues` in your z/OS-specific queue section, add a job control and the path to the script that kills the job.

For example,

```
Begin Queue
QUEUE_NAME= zos_queue
DESCRIPTION= Bkill for zos jobs.
JOB_CONTROLS= TERMINATE[C:\ppm\9.1.3.0\etc\zos -k]
End Queue
```

Chapter 6. Daemons

- jfd
- fod

jfd

Process Manager Server daemon.

Synopsis

jfd [**-2** | **-3** | **-4**]

jfd [**-V**]

Description

`jfd` is responsible for managing flow definitions and flows. When a flow definition is submitted to Process Manager Server, `jfd` ensures that it is run according to its schedule or based on any triggering events, and manages any dependency conditions for each job in the flow before submitting the job to LSF master host for processing.

Options

-2

Specifies to run `jfd` as not daemonized, and log debug information to the log file specified in JS_LOGDIR. This option is used by failover. You cannot use it manually.

-3

Specifies to run `jfd` as not daemonized, and log debug information to `stderr` (normally the terminal). This option may be used for debugging purposes. Use only under the direction of Technical Support.

-4

Specifies to run `jfd` as daemonized, and log debug information to the `jfd.log.`*`hostname`* log file. This option may be used for debugging purposes, and allows you to run **`jfd`** as a user other than `root`. Use only under the direction of Technical Support.

-V

Prints the Process Manager release version to `stderr` and exits.

See also

`fod`, **`jadmin`**

fod

Process Manager Server failover daemon.

Synopsis

fod

Chapter 7. Commands

Process Manager includes a command line interface you can use to issue commands to Process Manager. You can use commands to submit flow definitions to Process Manager, trigger flows to run, monitor and control running flows, and obtain history information about many Process Manager work items.

Process Manager provides commands for various purposes: creating and editing calendars, manipulating flow definitions, monitoring and controlling active flows, and obtaining history about various work items.

You cannot use commands to create a flow definition.

Calendar commands

You can use the following commands to work with Process Manager calendars:

- **caleditor**—to start the Calendar Editor graphical user interface
- **jcadd**—to create a calendar
- **jcals**—to display a list of calendars
- **jcdel**—to delete a calendar
- **jcmod**—to edit a calendar

Flow definition commands

You can use the following commands to work with flow definitions:

- **floweditor**—to start the Flow Editor graphical user interface
- **jrun**—to submit and run a flow immediately, without storing the flow definition in Process Manager
- **jsub**—to submit a flow definition to Process Manager
- **jtrigger**—to trigger the creation of a flow
- **jhold**—to place a flow definition on hold, preventing automatic triggering of the flow
- **jrelease**—to release a flow definition from hold, enabling automatic triggering of the flow
- **jdefs**—to display information about flow definitions
- **jremove**—to remove a flow definition from Process Manager

Flow monitor and control commands

You can use the following commands to monitor and control flows that are in the process of running or have recently completed:

- **flowmanager**—to start the Flow Manager graphical user interface
- **jalarms**—to list open alarms
- **jcomplete**—to complete a manual job
- **jflows**—to display information about a flow
- **jjob**—to kill or run a job, or to mark a job complete
- **jkill**—to kill a flow
- **jmanuals**—to list all manual jobs waiting for completion

- **jpublish**—to publish target flows for use by dynamic flows and flow arrays
- **jrerun**—to rerun an exited flow
- **jresume**—to resume a suspended flow
- **jsetvars**—to change the value of a local or global variable while a flow is running
- **jstop**—to suspend a flow
- **junpublish**—to unpublish target flows and remove them from the list for use by dynamic flows and flow arrays

Other commands

- **jid**—to verify the connection between the Process Manager Client and the Process Manager Server
- **jadmin**—to control the Process Manager daemon on Unix
- **jhist**—to view the historic information about server, flow definitions, flows, and jobs.
- **jreconfigalarm**—to reload the alarm definitions.

caleditor

starts the Calendar Editor.

Synopsis

caleditor

You use the **caleditor** command to start the Calendar Editor, where you can create new calendars, edit or delete existing calendars.

Examples

```
caleditor
```

opens the Calendar Editor.

floweditor

starts the Flow Editor.

Synopsis

floweditor [*file_name* [*file_name* ...]]

Description

You use the **floweditor** command to start the Flow Editor. You can specify one or more flow definition file names to open automatically when the Flow Editor starts. You can use this as a shortcut to quickly open a flow definition for editing.

Note:

Flow Editor may not be installed if you purchased the Platform Suite for SAS. For more information, contact your sales representative.

Options

file_name

Specifies the name of the file to be opened when the Flow Editor starts. If you do not specify a file name, the Flow Editor starts with no files opened. You can specify a list of files by separating the file names with a space.

Examples

```
floweditor /tmp/myflow.xml /flows/payupdt.xml
```

opens the Flow Editor, and opens `myflow.xml` and `payupdt.xml` at the same time.

```
floweditor
```

opens the Flow Editor with no files opened.

flowmanager

starts the Flow Manager.

Synopsis

flowmanager

Description

You use the **flowmanager** command to start the Flow Manager, which allows you to monitor and control existing flows.

Example

```
flowmanager
```

opens the Flow Manager.

jadmin

controls the Process Manager daemon jfd on UNIX.

Synopsis

jadmin [-s] start

jadmin stop

jadmin [-h|-V]

Description

You use the **jadmin** command to start and stop the Process Manager daemon. You must be either `root` or the primary Process Manager administrator to stop the Process Manager daemon.

Options

start

Starts the Process Manager daemon on UNIX. Ensure Process Manager is up and running before you start the Process Manager daemon. You must be `root` to use this option.

-s start

Starts the Process Manager daemon on UNIX in single-user mode. Ensure Process Manager is up and running before you start the Process Manager daemon. You must be the primary Process Manager administrator to use this option.

stop

Stops the Process Manager daemon on UNIX. You must be `root` or the primary Process Manager administrator to use this option.

-h

Prints the command usage to stderr and exits.

-V

Prints the Process Manager release version to `stderr` and exits.

Examples

```
jadmin start
```

Starts the Process Manager daemon.

```
jadmin -s start
```

Starts the Process Manager daemon in single-user mode.

```
jadmin stop
```

Stops the Process Manager daemon.

See also

jfd, js.conf

jalarms

lists the open alarms in Process Manager.

Synopsis

jalarms [**-u** *user_name*|**-u all**] [**-f** *flow_name*|**-i** *flow_id*] [**-t** *start_time*,*end_time*]

jalarms [**-h**]|[**-V**]

Description

You use the **jalarms** command to display an open alarm or a list of the open alarms. The following information is displayed:

- alarm name

- user who owns the flow
- the date and time the alarm occurred
- alarm type
- Description of the problem that caused the alarm, if it was specified by the creator of the flow

Options

-u *user_name*

Specifies the name of the user who owns the alarm. If you do not specify a user name, user name defaults to the user who invoked this command. If you specify -u all, information is displayed about alarms owned by all users.

-f *flow_name*

Specifies the name of the flow definition for which to display alarm information. Displays alarm information for flow definitions with the specified name.

-i *flow_ID*

Specifies the ID of the flow for which to display alarm information. Displays alarm information for flows with the specified ID.

-t *start_time*,*end_time*

Specifies the span of time for which you want to display the alarms. If you do not specify a start time, the start time is assumed to be the time the first alarm was opened. If you do not specify an end time, the end time is assumed to be now.

Specify the times in the format "*yyyy*/*mm*/*dd*/*HH*:*MM*". Do not specify spaces in the time interval string.

The time interval can be specified in many ways.

-h

Prints the command usage to `stderr` and exits.

-V

Prints the Process Manager release version to `stderr` and exits.

Time interval format

You use the time interval to define a start and end time for collecting the data to be retrieved and displayed. While you can specify both a start and an end time, you can also let one of the values default. You can specify either of the times as an absolute time, by specifying the date or time, or you can specify them relative to the current time.

Specify the time interval is follows:

start_time,*end_time* | *start_time*, | ,*end_time* | *start_time*

Specify *start_time* or *end_time* in the following format:

[*year*/][*month*/][*day*][/*hour*:*minute* | /*hour*:] | . | .-*relative_int*

Where:

- *year* is a four-digit number representing the calendar year.
- *month* is a number from 1 to 12, where 1 is January and 12 is December.
- *day* is a number from 1 to 31, representing the day of the month.
- *hour* is an integer from 0 to 23, representing the hour of the day on a 24-hour clock.
- *minute* is an integer from 0 to 59, representing the minute of the hour.
- . (period) represents the current month/day/hour:minute.
- *.-relative_int* is a number, from 1 to 31, specifying a relative start or end time prior to now.

start_time,*end_time*

Specifies both the start and end times of the interval.

start_time,

Specifies a start time, and lets the end time default to now.

,*end_time*

Specifies to start with the first logged occurrence, and end at the time specified.

start_time

Starts at the beginning of the most specific time period specified, and ends at the maximum value of the time period specified. For example, 3/ specifies the month of March—start March 1 at 00:00 a.m. and end at the last possible minute in March: March 31st at midnight.

Absolute time examples

Assume the current time is May 9 17:06 2002:

1,8 = May 1 00:00 2002 to May 8 23:59 2002

,4 = the time of the first occurrence to May 4 23:59 2002

6 = May 6 00:00 2002 to May 6 23:59 2002

3/ = Mar 1 00:00 2002 to Mar 31 23:59 2002

/12: = May 9 12:00 2002 to May 9 12:59 2002

2/1 = Feb 1 00:00 2002 to Feb 1 23:59 2002

2/1, = Feb 1 00:00 to the current time

,. = the time of the first occurrence to the current time

,2/10: = the time of the first occurrence to May 2 10:59 2002

2001/12/31,2002/5/1 = from Dec 31, 2001 00:00:00 to May 1st 2002 23:59:59

Relative time examples

.-9, = April 30 17:06 2002 to the current time

,.-2/ = the time of the first occurrence to Mar 9 17:06 2002

.-9,.-2 = nine days ago to two days ago (April 30, 2002 17:06 to May 7, 2002 17:06)

Example: Display all opened alarms for the last seven days

```
jalarms -u all -t ".-7,."
```

---

jcadd

creates a calendar and adds it to the set of Process Manager calendars for the user.

Synopsis

jcadd [**-s** | **-u** *user_name*][**-d** *description*] **-t** "*cal_expression*" "*cal_name*"

jcadd [**-h**]|[**-V**]

Description

You use the **jcadd** command when you need to define a new time expression for use in scheduling either a flow or a work item within a flow. You define a new time expression by creating a calendar with that expression. The calendar is owned by the user who runs this command. You must define a calendar expression when you use this command.

Options

-d *description*

Specifies a description for the calendar. Specify a meaningful description for the calendar that summarizes the expression.

-u *user_name*

You must be the Process Manager administrator or a Group administrator to use this option.

Sets the user account that owns the calendar. The owner of a calendar can modify and delete a calendar.

If you do not specify a user name, user name defaults to the user who invoked this command.

-s

Specifies that you are creating a system calendar. You must be a Process Manager administrator to create system calendars.

-t *cal_expression*

Specifies the dates on which you want some action to take place. You can enter specific dates, a range of dates, or a more complex expression that resolves to a series of dates.

Note:

If you want the calendars you create to be viewable in the Calendar Editor, specify abbreviated month and day names in all uppercase. For example: MON for Monday, MAR for March.

cal_name

Specifies the name of the calendar you are creating. Specify a unique name for the calendar. The first character cannot be a number. You can also use an underscore (_) and a dash (-) in the calendar name.

-h

Prints the command usage to `stderr` and exits.

-V

Prints the Process Manager release version to `stderr` and exits.

Limitations

Note that only merged calendars or calendar expressions with the following format can be viewed through the Calendar Editor graphical user interface:

`RANGE(`*`startdate`*`[, `*`enddate`*`]):PERIOD(1,*,`*`step`*`):`*`occurrence`*

Some examples that follow this format are:

```
RANGE(2001/1/1,2002/1/1):day(1,*,3) RANGE(2001/1/1,2002/1/1):week(1,*,3):MON,TUE RAN
GE(2001/1/1,2002/1/1):week(1,*,3):ABC(1) RANGE(2001/1/1,2002/1/1):month(1,*,3):1,3,5 RANGE
(2001/1/1,2002/1/1):month(1,*,3):MON(1),TUE(1) RANGE(2001/1/1,2002/1/1):month(1,*,3):ABC(1
) RANGE(2001/1/1,2002/1/1):JAN:1||RANGE(2001/1/1,2002/1/1):JAN:2 ABC && DEF || HIJ
```

where ABC, DEF, HIJ are predefined calendars.

Creating calendar expressions

You can create several types of calendar expressions when you are creating or modifying a calendar. You use these expressions within system calendar definitions or calendars defined or modified using the **jcadd** or **jcmod** commands:

- Absolute dates
- Schedules that recur daily
- Schedules that recur weekly
- Schedules that recur monthly
- Schedules that recur yearly
- Combined calendars

To create absolute dates:

Specify the date in the following standard format:

(*yyyy*/*mm*/*dd*)

For example:

(2001/12/31)

Specify multiple dates separated by commas. For example:

(2001/12/31,2002/12/31)

To create schedules that recur daily:

Specify the expression in the following format:

```
RANGE(startdate[,enddate]):day(1,*,step)
```

The ending date is optional. If it is not specified, the calendar is valid indefinitely. For example:

```
RANGE(2003/2/1,2003/12/31):day(1,*,2)
```

In the above example, the expression is true every other day, beginning February 1, 2003, until December 31, 2003.

To create schedules that recur weekly:

Specify the expression in one of the following formats:

```
RANGE(startdate[,enddate]):week(1,*,step):
day_of_week
```

where *step* is the interval between weeks and *day_of_week* is one or more days of the week, separated by commas. For example:

```
RANGE(2002/12/31):week(1,*,2):MON,FRI,SAT
```

or

```
RANGE(startdate[,enddate]):week(1,*,step):
abc(ii)
```

where step is the interval between weeks, *abc* is a previously defined calendar name and *ii* is an integer indicating a specific occurrence of a day within that calendar. For example:

```
RANGE(2002/01/01):week(1,*,3):MON(-1)
```

In the above example, MON(-1) refers to last Monday.

To create schedules that recur monthly:

Specify the expression in one of the following formats:

```
RANGE(startdate[,enddate]):month(1,*,step):
day_of_month
```

where *step* is the interval between months and *day_of_month* is one or more days of the month by number, separated by commas. For example:

```
RANGE(2002/12/31):month(1,*,2):1,15,30
```

or

```
RANGE(startdate[,enddate]):month
(1,*,step):abc(ii)
```

where step is the interval between months, abc is a previously defined calendar name or built-in keyword and ii is an integer indicating a specific occurrence of a day within that calendar. For example:

```
RANGE(2002/01/01):month(1,*,3):MON(-1)
```

In the above example, MON(-1) refers to last Monday.

or

```
RANGE(startdate[,enddate]):month(1,*,step):
day_of_week(ii)
```

where *step* is the interval between months, *day_of_week* is one or more days of the week separated by commas, and *ii* is an integer indicating a specific occurrence of a day within that calendar. For example:

```
RANGE(2002/01/01):month(1,*,3):MON(-1)
```

In the above example, MON(-1) refers to last Monday.

To create schedules that recur yearly:

Specify the expression in the following format:

```
RANGE(startdate[,enddate]):month:day
```

where *month* is the name of the month (JAN, FEB, MAR...DEC) and *day* is the day of the month (1,2,3...29,30,31). For example:

```
RANGE(2002/1/1,2004/12/31):JAN:1
```

To merge calendar expressions:

You can use Boolean logic to further qualify your schedule expressions. For example:

```
Mondays@Sys||Fridays@Sys && !Holidays@Sys
```

where Mondays@Sys, Fridays@Sys and Holidays@Sys are all predefined system calendars.

Built-in keywords-reserved words

Platform Process Manager reserves words that are used as building blocks to create calendars. You cannot use these reserved words in a calendar name. However, you can use them within calendar expressions, and they are recognized by Platform Process Manager. The following are the reserved words:

- apr, april, APR
- aug, august, AUG
- dates, DATES
- day, DAY
- dec, december, DEC
- feb, february, FEB
- fri, friday, FRI
- fy, FY
- h, HH
- jan, january, JAN
- jul, july, JUL
- jun, june, JUN
- m, MM
- mar, march, MAR
- may, MAY
- mon, monday, MON
- month, MONTH

- nov, november, NOV
- oct, october, OCT
- quarter, QUARTER
- range, RANGE
- sat, saturday, SAT
- sep, september, SEP
- sun, sunday, SUN
- thu, thursday, THU
- tue, tuesday, TUE
- wed, wednesday, WED
- yy, YY
- zzz, ZZZZ

Examples

```
jcadd -d "Mondays but not holidays" -t "Mondays@Sys && ! Holidays@Sys" Mon_Not_Holiday
```

Creates a calendar called `Mon_Not_Holiday`. This calendar resolves to any Monday that is not a holiday, as defined in the `Holidays` system calendar.

```
jcadd -d "Mondays, Wednesdays and Fridays" -t "Mondays@Sys || Wednesdays@Sys || Fridays@Sys" Everyotherday
```

Creates a calendar called `Everyotherday` that resolves to Mondays, Wednesdays and Fridays.

```
jcadd -d "Monday to Thursday" -t "*:*:MON-THU" Shortweek
```

Creates a calendar called `Shortweek` that resolves to Mondays, Tuesdays, Wednesdays and Thursdays, every month.

```
jcadd -d "Db report dates" -t "*:JAN,JUN,DEC:day(1)" dbrpt
```

Creates a calendar called `dbrpt` that resolves to the first day of January, June and December, every year.

See also

jcdel, **jcals**

---

jcals

displays the list of calendars in Process Manager. The calendars are listed by owning user ID.

Synopsis

jcals [**-l**] [**-u** *user_name*|**-u all**] [*cal_name*]

jcals [**-h**]|[**-V**]

Description

You use the **jcals** command to display information about one or more calendars. When using the default display option, the following information is displayed:

- user name
- calendar name

- the expression

Options

-l

Specifies to display the information in long format. In addition to the information listed above, this option displays the status of calendar (whether it is true today or not), the last date the calendar resolved to, the next date the calendar resolves to, and the calendar description.

-u *user_name*

Specifies the name of the user who owns the calendar. If you do not specify a user name, user name defaults to the user who invoked this command. If you specify -u all, information is displayed about calendars owned by all users.

cal_name

Specifies the name of the calendar. If you do not specify a calendar name, all calendars meeting the other criteria are displayed.

-h

Prints the command usage to `stderr` and exits.

-V

Prints the Process Manager release version to `stderr` and exits.

Examples

```
jcals -u all
```

Displays all calendars in Process Manager.

jcdel

deletes an existing calendar.

Synopsis

jcdel [**-f**][**-u** *user_name*] *cal_name* [*cal_name* ...]

jcdel [**-h**]|[**-V**]

Description

You use the **jcdel** command to delete one or more calendars from Process Manager. You must be the owner of a calendar to delete it.

If you delete a calendar that is currently in use by a flow definition or flow, or another calendar, the deleted calendar will continue to be available to these existing instances, but will no longer be available to new instances.

Options

-f

Specifies to force the deletion of the calendar.

-u *user_name*

Specifies the name of the user who owns the calendar. If you do not specify a user name, the user name defaults to the user who invoked this command.

cal_name

Specifies the name of the calendar you are deleting. You can specify multiple calendar names by separating the names with a space.

-h

Prints the command usage to `stderr` and exits.

-V

Prints the Process Manager release version to `stderr` and exits.

Examples

```
jcdel -u "barneyt" Rundays2001
```

Deletes the calendar `Rundays2001` owned by the user barneyt.

See also

jcadd, **jcals**

jcmod

edits an existing calendar. Using this command, you can change the calendar expression and the description of the calendar.

Synopsis

jcmod [**-d** *description*] [**-u** *user_name*] [**-t** *cal_expression*] *cal_name*

jcmod [**-h**]|[**-V**]

Description

You use the **jcmod** command when you need to change either the calendar expression or the description of an existing calendar. You must be the owner of the calendar or be a Process Manager administrator to change a calendar.

If you modify a calendar that is in use by a flow definition or flow, or another calendar, your changes will only take effect on any new instances; current instances will continue to use the previous calendar definition.

Options

-d *description*

Specifies a description for the calendar. Specify a meaningful description for the calendar that summarizes the expression.

-u *user_name*

Specifies the name of the user who owns the calendar. If you do not specify a user name, the user name defaults to the user who invoked this command.

-t *cal_expression*

Specifies the dates on which you want some action to take place. You can enter specific dates, a range of dates, or a more complex expression that resolves to a series of dates.

cal_name

Specifies the name of the calendar you are changing. You cannot change the name of the calendar.

-h

Prints the command usage to `stderr` and exits.

-V

Prints the Process Manager release version to `stderr` and exits.

Creating calendar expressions

You can create several types of calendar expressions when you are creating or modifying a calendar. You use these expressions within system calendar definitions or calendars defined or modified using the **jcadd** or **jcmod** commands:

- Absolute dates
- Schedules that recur daily
- Schedules that recur weekly
- Schedules that recur monthly
- Schedules that recur yearly
- Combined calendars

To create absolute dates:

Specify the date in the following standard format:
(*yyyy*/*mm*/*dd*)

For example:
(2001/12/31)

Specify multiple dates separated by commas. For example:
(2001/12/31,2002/12/31)

To create schedules that recur daily:

Specify the expression in the following format:
RANGE(*startdate*[,*enddate*]):day(1,*,*step*)

The ending date is optional. If it is not specified, the calendar is valid indefinitely. For example:
RANGE(2003/2/1,2003/12/31):day(1,*,2)

In the above example, the expression is true every other day, beginning February 1, 2003, until December 31, 2003.

To create schedules that recur weekly:

Specify the expression in one of the following formats:
RANGE(*startdate*[,*enddate*]):week(1,*,*step*):*day_of_week*

where *step* is the interval between weeks and *day_of_week* is one or more days of the week, separated by commas. For example:

```
RANGE(2002/12/31):week(1,*,2):MON,FRI,SAT
```

or

```
RANGE(startdate[,enddate]):week(1,*,step):abc(ii)
```

where step is the interval between weeks, *abc* is a previously defined calendar name and *ii* is an integer indicating a specific occurrence of a day within that calendar. For example:

```
RANGE(2002/01/01):week(1,*,3):MON(-1)
```

In the above example, MON(-1) refers to last Monday.

To create schedules that recur monthly:

Specify the expression in one of the following formats:

```
RANGE(startdate[,enddate]):month(1,*,step):day_of_month
```

where *step* is the interval between months and *day_of_month* is one or more days of the month by number, separated by commas. For example:

```
RANGE(2002/12/31):month(1,*,2):1,15,30
```

or

```
RANGE(startdate[,enddate]):month(1,*,step):abc(ii)
```

where step is the interval between months, abc is a previously defined calendar name or built-in keyword and ii is an integer indicating a specific occurrence of a day within that calendar. For example:

```
RANGE(2002/01/01):month(1,*,3):MON(-1)
```

In the above example, MON(-1) refers to last Monday.

or

```
RANGE(startdate[,enddate]):month(1,*,step):day_of_week(ii)
```

where *step* is the interval between months, *day_of_week* is one or more days of the week separated by commas, and *ii* is an integer indicating a specific occurrence of a day within that calendar. For example:

```
RANGE(2002/01/01):month(1,*,3):MON(-1)
```

In the above example, MON(-1) refers to last Monday.

To create schedules that recur yearly:

Specify the expression in the following format:

```
RANGE(startdate[,enddate]):month:day
```

where *month* is the name of the month (JAN, FEB, MAR...DEC) and *day* is the day of the month (1,2,3...29,30,31). For example:

```
RANGE(2002/1/1,2004/12/31):JAN:1
```

To merge calendar expressions:

You can use Boolean logic to further qualify your schedule expressions. For example:

```
Mondays@Sys||Fridays@Sys && !Holidays@Sys
```

where Mondays@Sys, Fridays@Sys and Holidays@Sys are all predefined calendars.

Built-in keywords—reserved words

Process Manager reserves words that are used as building blocks to create calendars. You cannot use these reserved words in a calendar name. However, you can use them within calendar expressions, and they are recognized by Process Manager. The following are the reserved words:

- apr, april, APR
- aug, august, AUG
- dates, DATES
- day, DAY
- dec, december, DEC
- feb, february, FEB
- fri, friday, FRI
- fy, FY
- h, HH
- jan, january, JAN
- jul, july, JUL
- jun, june, JUN
- m, MM
- mar, march, MAR
- may, MAY
- mon, monday, MON
- month, MONTH
- nov, november, NOV
- oct, october, OCT
- quarter, QUARTER
- range, RANGE
- sat, saturday, SAT
- sep, september, SEP
- sun, sunday, SUN
- thu, thursday, THU
- tue, tuesday, TUE
- wed, wednesday, WED
- yy, YY
- zzz, ZZZZ

EXAMPLES

```
jcmod -d "Valentines Day" -u "barneyt" -t "*:Feb:14" SpecialDays
```

Modifies a calendar called `SpecialDays`. This calendar resolves to February 14th every year.

jcomplete

acknowledges that a manual job is complete and specifies to continue processing the flow.

Synopsis

jcomplete [**-d** *description*] [**-u** *user_name*] [**-e** *exit_code*]-i *flow_id* *flow_name*[**:***subflow_name*]**:***manual_job_name*

jcomplete [**-h**]|[**-V**]

Description

You use the **jcomplete** command to mark a manual job complete, to tell Process Manager to continue processing that part of the flow. Only the branch of the flow that contains the manual job is affected by the manual job—other branches continue to process as designed. You must be the owner of the manual job or a Process Manager administrator to complete a manual job.

Options

-d *description*

Describes the manual process completed. You can use this field to describe results of the process, or any pertinent comments.

-e *exit_code*

Specifies the exit code with which to complete the manual job.

The exit code you specify determines the state of the manual job. Exit codes can be any number from 0 to 255.

If you did not define custom success exit codes in the Manual Job Definition, an exit code of 0 indicates the manual job was successful and the state is set to Done. Any other exit code indicates the manual job failed and its state is set to Exit.

If you defined custom success exit codes in the Manual Job Definition, an exit code of 0 and any of the numbers you specified in the Non-zero success exit codes field indicates the manual job was successful and the state is set to Done. Any other exit code indicates the manual job failed and its state is set to Exit.

-i *flow_id*

Specifies the ID of the flow in which the manual job is to be completed. This option is required to differentiate between multiple occurrences of the flow, ensuring the correct job is completed.

*flow_name***:***subflow_name***:***manual_job_name*

Specifies the name of the manual job to complete. Specify the fully-qualified manual job name, which is the flow name followed by the subflow name, if applicable, followed by the name of the manual job. For example:

```
myflow:prtcheck:prtpage
```

Specify the manual job name in the same format as it is displayed by the **jmanuals** command.

-u *user_name*

Specifies the name of the user who owns the manual job you are completing. If you do not specify a user name, user name defaults to the user who invoked this command.

-h

Prints the command usage to `stderr` and exits.

-V

Prints the Process Manager release version to `stderr` and exits.

Examples

```
jcomplete -d "printed check numbers 4002 to 4532" -i 42 payprt:checkprinter
```

completes the manual job `checkprinter` in the flow `payprt` with flow ID 42, and adds the comment "printed check numbers 4002 to 4532".

See also

jmanuals jjob

---

jdefs

displays information about the flow definitions stored in Process Manager for the specified user.

Synopsis

jdefs [**-l**] [**-u** *user_name*|**-u all**] [**-s** *status*] [*definition_name* [*definition_name* ...]] [**-v**]

jdefs [**-h**]|[**-V**]

Description

You use the **jdefs** command to display information about flow definitions and any associated flows. When using the default display option, the following information is displayed:

- user name
- flow name
- the status of the flow definition
- flow IDs of any associated flows
- the state of each flow
- flow version history and details

Options

-l

Specifies to display the information in long format. In addition to the information listed above, this option displays the following information:

- any events defined to trigger the flow
- any exit conditions specified in the flow definition

- the default version and the latest version of the flow

-u *user_name*

Specifies the name of the user who owns the flow definitions. If you do not specify a user name, user name defaults to the user who invoked this command. If you specify -u all, information is displayed about flow definitions owned by all users.

-s *status*

Specifies to display information about only the flow definitions that have the specified status. The default is to display all flow definitions regardless of status. Specify one of the following values for status:

ONHOLD

Displays information about flow definitions that are on hold: these are definitions that are not currently eligible to trigger automatically.

RELEASE

Displays information about flow definitions that are not on hold. This includes any flow definitions that were submitted with events and flow definitions that were submitted to be triggered manually. This does not include flows that were submitted on an adhoc basis, to be run once, immediately.

definition_name

Specifies the name of the flow definition. If you do not specify a flow name, all flow definitions meeting the criteria are displayed. To specify a list of flow definitions, separate the flow definition names with a space.

-v

Displays the version history of the flow.

-h

Prints the command usage to `stderr` and exits.

-V

Prints the Process Manager release version to `stderr` and exits.

Examples

```
jdefs -u barneyt -s RELEASE
```

Displays all flow definitions owned by barneyt that are not on hold.

jflows

displays information about the flows in Process Manager for the specified user. The information listed includes the current state and version of the flow.

Synopsis

jflows [**-l**] [**-u** *user_name*|**-u all**] [**-f** *flow_name*] [**-s** *state*]

jflows [**-l**] [*flow_id* [*flow_id* ...] | **0**]

jflows [**-h**]|[**-V**]

Description

You use the **jflows** command to display information about one or more flows. When using the default display option, the following information is displayed:

- user name
- flow name
- flow ID
- the state of the flow
- start and end time for each flow

Options

-l

Specifies to display the information in long format. In addition to the information listed above, this option displays the states of all jobs, job arrays, subflows, and flow arrays in the flow, and displays the currently-used version in the flow.

-u *user_name*

Specifies the name of the user who owns the flow. If you do not specify a user name, user name defaults to the user who invoked this command. If you specify -u all, information is displayed about flows owned by all users.

-f *flow_name*

Specifies the name of the flow definition. If you do not specify a flow definition name, all flow definitions meeting the other criteria you specify are displayed. This option is mutually exclusive with the other options—if you specify a flow name, you cannot specify a flow ID.

-s *state*

Specifies to display information about only the flows that have the specified state. If you do not specify a state, flows of all states that meet the other criteria you specify are displayed. Specify one of the following values for state:

Done

Displays information about flows that completed successfully.

Exit

Displays information about flows that failed.

Killed

Displays information about flows that were killed.

Running

Displays information about flows that are running.

Suspended

Displays information about flows that were suspended.

Waiting

Displays information about flows that are waiting.

flow_id

Specify the ID number of the flow. If you do not specify a flow ID, all flows meeting the other criteria you specify are displayed. This option is mutually

exclusive with the other options—if you specify a flow ID, you cannot specify a flow name. To specify a list of flows, separate the flow IDs with a space.

0

Specifies to display all flows.

-h

Prints the command usage to `stderr` and exits.

-V

Prints the Process Manager release version to `stderr` and exits.

Examples

```
jflows -f myflow
```

Displays all flows associated with the flow definition `myflow`.

---

jhist

displays historical information about Platform Process Manager Server, calendars, flow definitions, flows, and jobs.

Synopsis

jhist -C *category*[**,***category*,...] [**-o** *operator_user_name*|**-o all**] [**-u** *user_name*|**-u all**] [**-c** *calendar_name*] [**-f** *flow_name*] [**-i** *flow_ID*] [**-j** *job_name*] [**-t** *start_time*,*end_time*]

jhist [**-h**|**-V**]

Description

You use the **jhist** command to display historical information about the specified object, such as a calendar, job, or flow. You can display information about a single type of work item or multiple types of work items, for a single user or for all users.

If you do not specify a user name, **jhist** displays information for the user who invoked the command. If you do not specify a time interval, **jhist** displays information for the past 7 days, starting at the time the **jhist** command was invoked.

If your Platform Process Manager Client and Platform Process Manager Server are on separate hosts, the number of history records retrieved is limited to 1500 records by default. If the limit is reached, only the first (oldest) 1500 are retrieved. This limit is configurable with the parameter **JS_HISTORY_LIMIT** in `js.conf`.

Process Manager searches the diretory `JS_HOME/work/history/` for history logs.

If JS_HISTORY_ARCHIVE_DIR is defined in `js.conf`, you can view archived history logs by running **jhist** from the Process Manager server host: Process Manager searches both `JS_HOME/work/history/` and JS_HISTORY_ARCHIVE_DIR for history logs. When **jhist** is run from a host that is not the Process Manager server host, Process Manager only searches `JS_HOME/work/history/` for history logs.

Options

-C *category*

Specifies the type of object for which you want to see history. Choose from the following values:

- alarm-displays historical information about one or more alarms
- calendar-displays historical information about one or more calendars
- daemon-displays historical information about Platform Process Manager Server
- flowdef-displays historical information about one or more flow definitions
- flow-displays historical information about one or more flows
- job-displays historical information about one or more jobs or job arrays

You can specify more than one category by separating categories with a comma (,).

-u *user_name*

Displays information about categories owned by the specified user. If you do not specify a user name, user name defaults to the user who invoked this command. If you specify -u all, information is displayed about flows owned by all users.

-o *operator_user_name* | **-o all**

Only applies to the following categories: flowdef, flow, calendar.

Displays only information about flows, flow definitions, or calendars that the specified user can operate on. If you do not specify a user name, user name defaults to the user who invoked this command. If you specify `-o all`, displays information about all flow definitions, flows, or calendars that all users can operate on.

-t *start_time*,*end_time*

Specifies the span of time for which you want to display the history. If you do not specify a start time, the start time is assumed to be 7 days prior to the time the **jhist** command is issued. If you do not specify an end time, the end time is assumed to be now.

Specify the times in the format "*yyyy/mm/dd/HH:MM*". Do not specify spaces in the time interval string.

The time interval can be specified in many ways.

-c *calendar_name*

Specifies the name of the calendar for which to display historical information. If you do not specify a calendar name when displaying calendars, information is displayed for all calendars owned by the specified user.

Valid only when used with the **calendar** category.

-f *flow_name*

Specifies the name of the flow definition for which to display historical information. Displays flow definition, flow, or job information for flow definitions with the specified name.

Valid only with the **flowdef**, **flow**, and **job** categories.

-i *flow_ID*

Specifies the ID of the flow for which to display historical information. Displays flow and job information for flows with the specified ID.

Valid only with the **flow** and **job** categories.

-j job_*name*

Specifies the name of the job, job array or alarm to display historical information about. Displays information about the job, job array or alarm with the specified name.

Valid with the **job** or **alarm** categories.

-h

Prints the command usage to `stderr` and exits.

-V

Prints the Platform Process Manager release version to `stderr` and exits.

Usage

-C alarm

Displays the time when the alarm was raised and the type and description of the alarm.

-C calendar

Displays the times when calendars are added or deleted.

-C daemon

Displays the server startup and shutdown times. These values are only displayed when root invokes **jhist** or the **-u root** option is used.

-C flowdef

Displays information about when a flow definition state is:

- Submit-When a flow definition is submitted
- SubmitAndRun-When a flow runs immediately
- Remove-When a flow definition is removed from the system
- Release-When a flow definition is released from on hold
- Hold-When a flow definition is placed on hold
- Trigger-When a flow definition is triggered manually or by an event
- Instantiate-When a flow is created

-C flow

Displays information about when a flow state is:

- Start-When a flow is started
- Kill-When a flow is killed
- Suspend-When a flow is suspended
- Resume-When a flow is resumed from the Suspended state
- Finished-When a flow is completed

-C job

Displays information about when a job or job array is:

- Started
- Killed

- Suspended
- Resumed
- Finished

Time interval format

You use the time interval to define a start and end time for collecting the data to be retrieved and displayed. Although you can specify both a start and an end time, you can also let one of the values default. You can specify either of the times as an absolute time, by specifying the date or time, or you can specify them relative to the current time.

Specify the time interval is follows:

start_time,*end_time* | *start_time*, | ,*end_time* | *start_time*

Specify *start_time* or *end_time* in the following format:

[*year*/][*month*/][*day*][/*hour*:*minute* | /*hour*:] | . | .-*relative_int*

Where:

- *year* is a four-digit number representing the calendar year.
- *month* is a number from 1 to 12, where 1 is January and 12 is December.
- *day* is a number from 1 to 31, representing the day of the month.
- *hour* is an integer from 0 to 23, representing the hour of the day on a 24-hour clock.
- *minute* is an integer from 0 to 59, representing the minute of the hour.
- . (period) represents the current month/day/hour:minute.
- .-*relative_int* is a number, from 1 to 31, specifying a relative start or end time prior to now.

  start_time,*end_time*

  Specifies both the start and end times of the interval.

  start_time,

  Specifies a start time, and lets the end time default to now.

  ,*end_time*

  Specifies to start with the first logged occurrence, and end at the time specified.

  start_time

  Starts at the beginning of the most specific time period specified, and ends at the maximum value of the time period specified. For example, 3/ specifies the month of March-start March 1 at 00:00 a.m. and end at the last possible minute in March: March 31st at midnight.

Absolute time examples

Assume the current time is May 9 17:06 2005:

1,8 = May 1 00:00 2005 to May 8 23:59 2005

,4 = the time of the first occurrence to May 4 23:59 2005

6 = May 6 00:00 2005 to May 6 23:59 2005

3/ = Mar 1 00:00 2005 to Mar 31 23:59 2005

/12: = May 9 12:00 2005 to May 9 12:59 2005

2/1 = Feb 1 00:00 2005 to Feb 1 23:59 2005

2/1, = Feb 1 00:00 to the current time

,. = the time of the first occurrence to the current time

,2/10: = the time of the first occurrence to May 2 10:59 2005

2001/12/31,2005/5/1 = from Dec 31, 2001 00:00:00 to May 1st 2005 23:59:59

Relative time examples

.-9, = April 30 17:06 2005 to the current time

,.-2/ = the time of the first occurrence to Mar 7 17:06 2005

.-9,.-2 = nine days ago to two days ago (April 30, 2005 17:06 to May 7, 2005 17:06)

Examples

Display information about the calendar mycalendar and all flows for user1:

```
jhist -C calendar,flow -u user1 -c mycalendar
```

Display information about the daemon and calendar for the past 30 days:

```
jhist -C calendar,daemon -t .-30,. -u all
```

Display information for all flows with the name flow1, for user1 in the past week (counting 7 days back from today):

```
jhist -C flow -u user1 -f flow1 -t .-7,.
```

Display information for all flows with the ID 231 for the past 3 days:

```
jhist -C flow -i 231 -t .-3,.
```

Display information for all flows with the ID 231 and all related jobs from March 25, 2005 to March 31, 2005:

```
jhist -C flow,job -i 231 -t 2005/3/25,2005/3/31
```

Display information for all flows with the ID 101 and all related jobs with the name myjob:

```
jhist -C flow,job -i 101 -j myjob
```

Display information for all flows associated with the flow definition `myflow` and flows dated later than January 31, 2005

```
jhist -C flowdef,flow -f myflow 2005/1/31,.
```

Display information for all flows associated with the flow definition `myflow` and that userA can operate on

```
jhist -C flowdef,flow -f myflow -o userA
```

jhold

places a previously submitted flow definition on hold. No automatic events can trigger this definition until it has been explicitly released. Use this command when you want to temporarily interrupt automatic triggering of a flow. When a flow is on hold, it can still be triggered manually, such as for testing purposes.

Synopsis

jhold [**-u** *user_name*] *flow_name* [*flow_name* ...]

jhold [**-h**]|[**-V**]

Description

You use the **jhold** command to place a submitted flow definition on hold. This prevents it from being triggered automatically by any events. You must be the owner of a flow definition or the Process Manager administrator to place a flow definition on hold.

Options

-u *user_name*

Specifies the name of the user who owns the flow. Use this option if you have administrator authority and you are holding the flow on behalf of another user. If you do not specify a user name, user name defaults to the user who invoked this command.

flow_name

Specifies the name of the flow definition. To specify a list of flow definitions, separate the flow definition names with a space.

-h

Prints the command usage to `stderr` and exits.

-V

Prints the Process Manager release version to `stderr` and exits.

Examples

```
jhold myflow
```

Places the flow definition `myflow`, which is owned by the current user, on hold.

```
jhold -u "user01" payupdt
```

Places the flow definition `payupdt`, which is owned by user01, on hold.

See also

jrelease

jid

displays the host name, version number and copyright date of the current Process Manager Server.

Synopsis

jid [**-h**|**-V**]

Description

You use the **jid** command to verify the connection between Process Manager Client and Process Manager Server. If the command returns the host name of Process Manager Server, you have successfully connected to the server. If server failover is enabled, the **jid** command displays the host where the server is currently running.

Options

-h

Prints command usage to `stderr` and exits.

-V

Prints Process Manager release version to `stderr` and exits.

jjob

controls a job in a running flow.

Synopsis

jjob [**-u** *user_name*] **-i** *flow_id* **-c**|**-k**|**-r**|**-p**|**-g**|**-l** *flow_name*[**:***subflow_name*]**:***job_name*

Flow arrays in UNIX:

jjob [**-u** *user_name*] **-i** *flow_id* **-c**|**-k**|**-r**|**-p**|**-g**|**-l** "*flow_name*[**:***subflow_name*]**:***job_name*"

jjob [**-h**]|[**-V**]

Description

You use the **jjob** command to kill or run a job, or mark a job complete. You must be the owner of the job or a Platform Process Manager administrator or control administrator to control it.

Options

-u *user_name*

Specifies the name of the user who owns the job you are controlling. If you do not specify a user name, user name defaults to the user who invoked this command.

-i *flow_id*

Specifies the ID of the flow containing the job to be controlled. This option is required to differentiate between multiple occurrences of the flow, ensuring the correct job is selected.

-c

Specifies to mark the job complete. You can only complete a job in a flow that has exited. you use this option before rerunning a flow, to continue processing the remainder of the flow.

-k

Specifies to kill the job.

-r

Specifies to run or rerun the job.

-p

Specifies to put the job on hold. Only jobs in the Waiting state can be put on hold. You can put on hold LSF jobs, job submission scripts, local jobs, and job arrays.

If the selected job is in a flow array, by default the hold applies to the job in the element the job is in. You can, alternatively, apply the hold to jobs in all elements in the flow array.

When you put a job in the flow on hold, the flow pauses at that specific job. Only the branch of the flow that contains the job that is On Hold pauses. Other branches of the flow continue to run. The status of the flow is not affected.

When desired, you can then release the job that you have put on hold.

-g

Specifies to release a job that has been put on hold. You can release LSF jobs, job submission scripts, local jobs, and job arrays that have been put on hold.

When you release a job that has been put on hold, the flow instance continues to run and the job receives the status Waiting.

-l

Specifies to view the detailed history of local and input variables that the job uses. This does not show global variables.

flow_name:*subflow_name*:*manual_job_name*

Specifies the name of the job to control. Specify the fully-qualified job name, which is the flow name followed by the subflow name, if applicable, followed by the name of the job. For example:

```
myflow:print:prtreport
```

Note:

When specifying the job name for a flow array, you must enclose the name in quotation marks ("). This is because the Linux command line does not process parentheses characters ((or)) properly unless you use quotation marks.

For example:

```
"myflow:print(5):prtreport"
```

-h

Prints the command usage to `stderr` and exits.

-V

Prints the Platform Process Manager release version to `stderr` and exits.

Examples

Kill a specific flow

```
jjob -i 42 -k payprt:report
```

kill the job report in the flow `payprt` with flow ID 42.

Hold and release a job

- Hold a job

  ```
  jjob -i 42 -p "myflow:myjob"
  ```

  In flow with ID 42, flow name myflow, put the job named myjob on hold. The job receives the status On Hold and the flow stops running when it reaches that specific job.
- Release the job

  ```
  jjob -i 42 -g "myflow:myjob"
  ```

  In flow with ID 42, flow name myflow, release the job named myjob. The flow will resume running from that point onward in the flow.

Hold and release a job array

- Hold a job array

  ```
  jjob -i 42 -p -a "myflow:myarray"
  ```

  In flow with ID 42, flow name myflow, put the job array named myarray on hold. The job array receives the status On Hold and the flow stops running when it reaches that specific job array.
- Release the job array

  ```
  jjob -i 42 -g -a "myflow:myarray"
  ```

  In flow with ID 42, flow name myflow, release the job array named myarray. The flow will resume running from that point onward in the flow.

Hold and release a job in a flow array

- Hold a job in a flow array

  ```
  jjob -i 45 -p "mymainflow:myflowarray(1):myjob"
  ```

  In flow with ID 45, flow name mymainflow, flow array myflowarray hold the job named myjob in the first element only. The job receives the status On Hold and the subflow stops running when it reaches that specific job in the flow array.
- Release the job in the flow array

  ```
  jjob -i 45 -g "mymainflow:myflowarray(1):myjob"
  ```

  In flow with ID 45, flow name mymainflow, flow array named myflowarray, release the job named myjob in the first element only. The job receives the status Waiting and the subflow will continue running once it reaches that job in the flow.
- Hold all jobs in all elements in the flow array

  ```
  jjob -i 45 -p "mymainflow:myflowarray:myjob"
  ```
- Release all jobs in all elements in the flow array

  ```
  jjob -i 45 -g "mymainflow:myflowarray:myjob"
  ```

See Also

jmanuals

jkill

kills a flow.

Synopsis

jkill [**-u** *user_name*|**-u all**] [**-f** *flow_name*]

jkill *flow_id* [*flow_id* ...] | **0**

jkill [**-h**]|[**-V**]

Description

You use the **jkill** command to kill all flows, all flows belonging to a particular user, all flows associated with a flow definition, or a single flow. Any incomplete jobs in the flow are killed. Any work items that depend on the successful completion of this flow do not run. Only users with administrator authority can kill flows belonging to another user.

Options

-u *user_name*

Specifies the name of the user who owns the flow. Use this option if you have administrator authority and you are killing the flow on behalf of another user. If you do not specify a user name, user name defaults to the user who invoked this command. If you specify -u all, and you have administrator authority, you can kill flows belonging to all users.

-f *flow_name*

Specifies the name of the flow definition. Use this option if you want to kill all flows associated with the same flow definition. This option is mutually exclusive with the other options, if you specify a flow name, you cannot specify a flow ID.

flow_id

Specifies the ID of the flow you want to kill. Use this option if you want to kill one or more specific flow IDs. This option is mutually exclusive with the other options—if you specify a flow ID, you cannot specify a flow name. To specify a list of flow IDs, separate the flow IDs with a space.

0

Specifies to kill all flows.

-h

Prints the command usage to `stderr` and exits.

-V

Prints the Process Manager release version to `stderr` and exits.

Examples

```
jkill -f myflow
```

Kills all flows associated with the flow definition `myflow`. Does not affect the flow definition.

jmanuals

displays all manual jobs that have not yet been completed.

Synopsis

jmanuals [**-i** *flow_ID*] [**-u** *username* |**-u all**] [**-f** *flow_definition*] [**-r yes** | **-r no**]

jmanuals [**-h**]|[**-V**]

Description

You use the **jmanuals** command to list the flows that contain manual jobs that have not yet been completed.

Options

-i *flow_ID*

Specifies the ID of the flow for which to display manual jobs.

-u *user_name*

Displays manual jobs in flows owned by the specified user. If you do not specify a user name, user name defaults to the user who invoked this command. If you specify -u all, manual jobs are displayed for flows owned by all users.

-f *flow_definition*

Specifies the name of the flow definition for which to display manual jobs. Manual jobs are displayed for all flows associated with this flow definition.

-r yes

Specifies to display only those manual jobs that require completion at this time.

-r no

Specifies to display only those manual jobs that do not require completion at this time.

-h

Prints the command usage to `stderr` and exits.

-V

Prints the Process Manager release version to `stderr` and exits.

See also

jcomplete

jpublish

publishes a target flow to Process Manager.

Synopsis

jpublish [**-u** *user_name*] [**-f** *flow_name*]

jpublish [**-h**]|[**-V**]

Description

You use the **jpublish** command to publish a target flow to Process Manager. Dynamic subflows and flow arrays can only refer to published target flows.

Only Process Manager administrators and control administrators can publish target flows.

Options

-u *user_name*

Specifies the name of the user who owns the flow.

-f *flow_name*

Specifies the name of the flow. If you do not specify a flow name, all flows meeting the other criteria are published.

-h

Prints the command usage to `stderr` and exits.

-V

Prints the Process Manager release version to `stderr` and exits.

Examples

```
jpublish -u userA -f flow1
```

Publishes the flow1 flow belonging to user A.

See also

junpublish

jreconfigadmin

dynamically reconfigures and updates the list of administrators.

Synopsis

jreconfigadmin [**-h**]|[**-V**]

Description

You use the **jreconfigadmin** command to manually trigger a dynamic reconfiguration and update of the list of administrators.

Run the **jreconfigadmin** command if you changed the list of administrators (by changing the **JS_ADMINS** or **JS_CONTROL_ADMINS** parameters in the `js.conf` file, or by changing the membership in a user group specified in the **JS_ADMINS** or **JS_CONTROL_ADMINS** parameters in the `js.conf` file, or when

JS_ENABLE_GROUP_ADMIN=true by changing the membership of an LSF user group in the LSF `lsb.users` file) and require this change to apply immediately rather than at the next scheduled update.

If you disabled scheduled updates of the list of administrators (by setting **JS_ADMIN_UPDATE_INTERVAL** in `js.conf` to 0), you need to manually run **jsreconfigadmin** whenever you modify the **JS_ADMINS** or **JS_CONTROL_ADMINS** parameters, whenever you modify any user groups specified in the **JS_ADMINS** or **JS_CONTROL_ADMINS** parameters, or when **JS_ENABLE_GROUP_ADMIN=true** whenever you modify Group administrators or group members of an LSF user group in the LSF `lsb.users` file.

You must be a Process Manager administrator account to use this command.

Options

-h

Prints the command usage to `stderr` and exits.

-V

Prints the Process Manager release version to `stderr` and exits.

jreconfigalarm

reloads the alarm definitions.

Synopsis

jreconfigalarm [**-h**|**-V**]

Description

You use the **jreconfigalarm** command to reload the alarm definitions. You use this command to add or change alarm definitions without restarting Process Manager Server. You must be a Process Manager administrator to use this command.

Options

-h

Prints the command usage to `stderr` and exits.

-V

Prints the Process Manager release version to `stderr` and exits.

jrelease

releases a previously held flow definition.

Synopsis

jrelease [**-u** *user_name*] *flow_name* [*flow_name* ...]

jrelease [**-h**]|[**-V**]

Description

You use the **jrelease** command to release a submitted flow definition from hold. The flow definition is now eligible to be triggered automatically by any of its triggering events. Use this command when you want to resume automatic triggering of a flow.

Options

-u *user_name*

Specifies the name of the user who owns the flow. Use this option if you have administrator authority and you are releasing the flow on behalf of another user. If you do not specify a user name, user name defaults to the user who invoked this command.

flow_name

Specifies the name of the flow definition. To specify a list of flow definitions, separate the flow definition names with a space.

-h

Prints the command usage to `stderr` and exits.

-V

Prints the Process Manager release version to `stderr` and exits.

Examples

```
jrelease myflow
```

Releases the flow definition `myflow`, which is owned by the current user, from hold.

```
jrelease -u "user01" payupdt
```

Releases the flow definition `payupdt`, which is owned by user01, from hold.

See also

jhold

jremove

removes a previously submitted flow definition from Process Manager.

Synopsis

jremove [**-u** *user_name*] **-f** *flow_name* [*flow_name* ...]

jremove [**-h**]|[**-V**]

Description

You use the **jremove** command to remove a submitted flow definition from Process Manager. Issuing this command has no impact on any flows associated with the definition, but no further flows can be triggered from it. Use this command when you no longer require this definition, or when you want to replace a definition that was created by a user ID that no longer exists. If you want to temporarily interrupt the automatic triggering of a flow, use the **jhold** command.

Options

-u *user_name*

Specifies the name of the user who owns the flow. Use this option if you have administrator authority and you are removing the flow on behalf of another user. If you do not specify a user name, user name defaults to the user who invoked this command.

-f

Forces the removal of a flow definition that other flows have dependencies upon.

flow_name

Specifies the name of the flow definition. To specify a list of flow definitions, separate the flow definition names with a space.

-h

Prints the command usage to `stderr` and exits.

-V

Prints the Process Manager release version to `stderr` and exits.

Examples

```
jremove myflow
```

Removes the definition `myflow` from Process Manager. In this example, `myflow` is owned by the current user.

```
jremove -u "user01" payupdt
```

Removes the definition `payupdt` from Process Manager. In this example, `payupdt` is owned by user01.

See also

jsub, jhold

jrerun

reruns an exited, done, or running flow.

Synopsis

jrerun [**-v "***var***=***value*[**;***var1***=***value1***;...]"**] *flow_id* [*flow_id* ...]

jrerun [**-h**]|[**-V**]

Description

You use the **jrerun** command to rerun a flow. The flow must have a state of Exit, Done, or Running.

The flow is rerun from the first exited job or starting point, and the flow continues to process as designed.

Note that in order to rerun the flow, work items used as starting points to rerun the flow must have their dependencies met.

If the flow contains multiple branches, the flow is rerun from the first exited jobs or starting points in each branch and continues to process as designed.

You must be the owner of a flow or a Process Manager administrator to use this command.

You cannot use this command to rerun a flow that was killed—you must trigger the flow again.

Options

-v *var=value*

Specifies to pass variables and their values to the flow when rerunning it. To specify a list of variables, separate the variable and value pairs with a semi-colon (;). The value of the variable is available only within the scope of the flow itself—local variables only.

flow_id

Specifies the ID of the flow to rerun. To specify a list of flows, separate the flow IDs with a space.

-h

Prints the command usage to `stderr` and exits.

-V

Prints the Process Manager release version to `stderr` and exits.

Examples

```
jrerun 1234
```

reruns the flow with the flow ID 1234.

```
jrerun -v "USER=jdoe" 277
```

reruns the flow with the flow ID 277 and passes it a value of `jdoe` for the `USER` variable.

jresume

resumes a suspended flow.

Synopsis

jresume [**-u** *user_name*|**-u all**] [**-f** *flow_name*]

jresume *flow_id* [*flow_id* ...] | **0**

jresume [**-h**]|[**-V**]

Description

You use the **jresume** command to resume all flows, all flows belonging to a particular user, all flows associated with a particular flow definition, or a single flow. Only users with administrator authority can resume flows belonging to another user.

Options

-u *user_name*

Specifies the name of the user who owns the flow. Use this option if you have administrator authority and you are resuming the flow on behalf of another user. If you do not specify a user name, user name defaults to the user who invoked this command. If you specify -u all, and you have administrator authority, you can resume flows belonging to all users.

-f *flow_name*

Specifies the name of the flow definition. Use this option if you want to resume all suspended flows associated with the same definition. This option is mutually exclusive with the other options—if you specify a flow name, you cannot specify a flow ID.

flow_id

Specifies the ID of the flow you want to resume. Use this option if you want to resume one or more specific flow IDs. This option is mutually exclusive with the other options—if you specify a flow ID, you cannot specify a flow name. To specify a list of flow IDs, separate the flow IDs with spaces.

0

Specifies to resume all suspended flows.

-h

Prints the command usage to `stderr` and exits.

-V

Prints the Process Manager release version to `stderr` and exits.

Examples

```
jresume 14 17 22
```

Resumes the flows with IDs 14, 17 and 22.

```
jresume 0
```

Resumes all suspended flows owned by the user invoking the command.

```
jresume -u all
```

Resumes all suspended flows owned by all users.

See also

jstop

---

jrun

triggers a flow definition from a file and runs the flow immediately without storing the flow definition in Process Manager.

Synopsis

jrun [**-v** "*var*=*value*[**;***var1*=*value1***;**...]"] *flow_file_name*

jrun [**-h**]|[**-V**]

Description

You use the **jrun** command when you want to trigger and run a flow immediately, without storing the flow definition within Process Manager. A flow ID is displayed when the flow is successfully submitted. This command is most useful for flows that run only once, or for testing a flow definition prior to putting it into production. You must be the owner of a flow definition or have Process Manager administrative authority to use this command.

Options

-v *var=value*

Specifies to pass variables and their values to the flow when running it. To specify a list of variables, separate the variable and value pairs with a semi-colon (;). The value of the variable is available only within the scope of the flow itself—local variables only.

flow_file_name

Specifies the name of the file containing the flow definition.

-h

Prints the command usage to `stderr` and exits.

-V

Prints the Process Manager release version to `stderr` and exits.

Examples

```
jrun /flows/backup.xml
```

Runs the flow defined in `/flows/backup.xml`. It does not store the definition of the flow in Process Manager.

```
jrun -v "USER=bsmith;YEAR=2003" /flows/payupdt.xml
```

Runs the flow defined in `/flows/payupdt.xml`, and passes it a value of bsmith and 2003 for the `USER` and `YEAR` variables respectively. It does not store the definition of the flow in Process Manager.

jsetvars

sets values for variables during the runtime of a flow.

Synopsis

jsetvars -i *flow_ID***-l** [*scope*]

jsetvars -i *flow_ID* [*scope***:**]*var=value* [[*scope***:**]*var=value* ...]

jsetvars -i *flow_ID* **-r** [*scope***:**]*var* [[*scope***:**]*var* ...]

jsetvars -l

jsetvars *var=value* [*var=value* ...]

jsetvars -r *var* [*var* ...]

jsetvars -h |**-V**

Description

Use the **jsetvars** command to change the value of one or more local variables in a flow at runtime or to change the value of one or more global variables at runtime.

Options

`jsetvars -i` *flow_ID* `-l` [*scope*]

List all variables for the flow with the specified ID at the main flow scope.

[*scope***]**

If scope is specified, lists all variables for the flow with the specifed ID in the specified scope.

Only one scope can be specified. If more than one scope is specified, only the first scope is used. For example, "jsetvars -i 59 -l F2:F1 F2" only list variables at the F2:F1 scope.

`jsetvars -i` *flow_ID* [*scope*`:`]*var=value* [[*scope*`:`]*var=value* ...]

Sets variables for the flow with the specified ID at the main flow scope.

[*scope:***]**

If scope is specified, sets variables for the flow with the specifed ID in the specified scope.

[*var=value* **[[***scope***:]***var=value* **...]**

Specifies the value to which to set the specified variable. Separate variables with a space.

You cannot combine variables of the same scope together. For example, "jsetvars -i 59 F2:F1:A=1 B=2" sets A=1 at the F2:F1 scope, B=2 at the main flow scope.

`jsetvars -i` *flow_ID* `-r` [*scope*`:`]*var* [[*scope*`:`]*var* ...]

Removes variables for the flow with the specified ID at the main flow scope.

[*scope:***]**

If scope is specified, removes variables for the flow with the specifed ID in the specified scope.

var **[[***scope***:]***var* **...]**

Specifies the names of the variables to remove. Separate variables with a space.

`jsetvars -l`

List all variables at the global scope.

`jsetvars` *var=value* [*var=value* ...]

Sets variables at the global scope. Separate variables with a space.

`jsetvars -r` *var* [*var* ...]

Removes the specified variables at the global scope. Separate variable names with a space.

-h

Prints the command usage to `stderr` and exits.

-V

Prints the Process Manager release version to `stderr` and exits.

Example: Set the value of the `priority` variable to 10 for the flow with the ID 1234.

```
jsetvars -i 1234 priority=10
```

Example: Set the `date` global variable value to 05-09-2007

```
jsetvars -g -s date=05-09-2007
```

If the `date` variable already exists, this changes the value of the `date` variable, otherwise, this adds a new variable called `date`).

Example: Delete the `time` variable from the flow with the ID 1234.

```
jsetvars -i 1234 -r time
```

Example: Set variables at different scopes

```
jsetvars -i 21 mainvar1=123 mainvar2=456 MF:SF1:myvar1=abc MF:SF1:myvar2=xyz
 MF:SF2:svar1=333 MF:SF2:svar2=555
```

For the flow with the ID 21, this command sets the `mainvar1` and `mainvar2` variables at the main flow scope level. Also sets the `myvar1` and `myvar2` variables at the subflow level (specifically, the `MF:SF1` subflow), and sets the `svar2` variables at the subflow level (specifically, the `MF:SF2` subflow). If these variables already exist, this command changes the value of these variables, otherwise, this command adds any new variables that do not already exist.

Example: Set variables for flow arrays

```
jsetvars -i 212 MF:FA:myarrayvar=abc#{JS_FLOW_INDEX}
```

For the flow with the ID 212 and assuming `MF:FA` is a flow array, this command sets the `myarrayvar` variable to `abc1`, `abc2`, `abcX`, for all the different flow array elements (for example, for `212:MF:FA(1)`, `212:MF:FA(2)`, and the remaining flow array elements to `212:MF:FA(X)`).

Example: List all variables for a flow

```
jsetvars -i 21 -l MF:SF1
```

For the flow with the ID 21, lists all variables at the `MF:SF1` subflow scope.

Example: Remove variables at different scopes

```
jsetvars -i 21 -r mainvar MF:SF1:myvar1 MF:SF1:myvar2 MF:SF2:myvar3
```

For the flow with the ID 21, removes the `mainvar` variable at the main flow scope, removes `myvar1` and `myvar2` variables at the `MF:SF1` subflow scope, and removes the `myvar3` variable at the `MF:SF2` subflow scope.

jsetversion

sets the default version of a flow.

Synopsis

jsetversion -v *default_version* [**-u** *user_name*] *flow_name ...*

jsetversion [**-h**]|[**-V**]

Description

You use the **jsetversion** command to set the default version of the specified flow. The default version of the flow is the version set to be effective at the current time. If you trigger this flow, Process Manager will instantiate the flow instance with the default version.

Options

-v *default_version*

Specifies the version of the flow that you are setting as the default version.

-u *user_name*

Specifies the name of the user who owns the flow. If you do not specify a user name, user name defaults to the user who invoked thjis command.

flow_name

Specifies the name of the flow for which you are setting the default version.

-h

Prints the command usage to `stderr` and exits.

-V

Prints the Process Manager release version to `stderr` and exits.

Examples

```
jsetversion -v 1.3 flow1
```

Sets version 1.3 as the default version for the flow named `flow1`.

jsinstall

runs **jsinstall**, the Process Manager installation and configuration script

Synopsis

jsinstall [-s -y] -f install.config

jsinstall -h | -V

Description

jsinstall runs the Process Manager installation scripts and configuration utilities to install a new Process Manager component. You should install as root.

Before installing and configuring Process Manager, **jsinstall** checks the installation prerequisites, outputs the results to `prechk.rpt`, writes any unrecoverable errors to the `install.err file` and exits. You must correct these errors before continuing to install and configure Process Manager.

During installation, **jsinstall** logs installation progress in the **install.log** file, uncompresses, extracts and copies Process Manager files, and configures Process Manager Server.

To uninstall Process Manager, delete the folder in which it was installed.

Options

-s

Performs a silent installation of Process Manager.

Creates an installation log `install.log` in the directory in which Process Manager was installed. If any errors occurred, also creates `install.err` in the same location.

-y

Accepts the license agreement for the silent installation.

-f install.config

Specify the `install.config` file you edited to perform the installation.

Installation parameters are described in the file.

-h

Prints the command usage to `stderr` and exits.

-V

Prints the Process Manager release version to `stderr` and exits.

jstop

suspends a running flow.

Synopsis

jstop [**-u** *user_name*|**-u all**] [**-f** *flow_name*]

jstop *flow_id* [*flow_id* ...] | **0**

jstop [**-h**]|[**-V**]

Description

You use the **jstop** command to suspend all flows, all flows belonging to a user, all flows associated with a flow definition, or a single flow. All incomplete jobs within the flow are suspended. Only users with administrator authority can suspend flows belonging to another user.

Options

-u *user_name*

Specifies the name of the user who owns the flows. Use this option if you have administrator authority and you are suspending the flow on behalf of another user. If you do not specify a user name, user name defaults to the user who invoked this command. If you specify -u all, and you have administrator authority, you can suspend flows belonging to all users.

-f *flow_name*

Specifies the name of the flow definition. Use this option if you want to suspend all flows associated with a particular flow definition. This option is mutually exclusive with the other options—if you specify a flow name, you cannot specify a flow ID.

flow_id

Specifies the ID of the flow you want to suspend. Use this option if you want to suspend one or more specific flow IDs. This option is mutually exclusive with the other options—if you specify a flow ID, you cannot specify a flow name. To specify a list of flow IDs, separate the flow IDs with a space.

0

Specifies to suspend all flows.

-h

Prints the command usage to `stderr` and exits.

-V

Prints the Process Manager release version to `stderr` and exits.

Examples

```
jstop -f "myflow"
```

Suspends all flows associated with the definition `myflow`. Does not affect the flow definition.

```
jstop 14
```

Suspends flow ID 14.

```
jstop 0
```

Suspends all flows.

See also

jresume

jsub

submits a flow definition to Process Manager.

Synopsis

jsub [**-H**] [**-r**|**-d**] [**-m** "*ver_comment*"] [[[**-T** *time_event*] ...] [[**-F** "*file_event*"] ...] [[**-p** "*proxy_event*"] ...] [**-C** *combination_type*]] *flow_file_name*

jsub [**-h**]|[**-V**]

Description

You use the **jsub** command to submit a flow definition to Process Manager. When you submit the flow definition, you may specify the event that triggers the flow, if applicable. If you do not specify an event to trigger the flow, it requires a manual trigger. You must be the owner of the flow definition, or have Process Manager administrator authority to submit a flow definition.

Note: The flow definition you are submitting may contain pre-defined events that trigger the flow. When you submit this flow using the **jsub** command, those events are overwritten by any specified in the command. If the flow definition contains triggering events, and you submit the flow definition without specifying a triggering event, those events are deleted from the definition that is submitted, and the flow definition requires a manual trigger.

Options

-H

Submits the flow definition on hold. No automatic events can trigger this definition until it has been explicitly released. Use this option when the flow definition is complete, but you are not yet ready to start running flows on its defined schedule. When a definition is on hold, it can still be triggered manually, such as for testing purposes.

-r

Replace. Specifies that, if a flow definition with the same name already exists in Process Manager, it is replaced with the definition being submitted. If you do not specify **-r** and the flow definition already exists, the submission fails.

-d

Duplicate. Specifies that, if a flow definition with the same name already exists in Process Manager, a unique number is appended to the flow definition name to make it unique. The new name of the flow definition is displayed in the confirmation message when the flow definition is successfully submitted.

-m "*ver_comment***"**

Submit the flow with version comments. **jsub** returns a flow version number after each successful submission.

-T *time_event*

Specifies to automatically trigger a flow when the specified time events are true. Specify the time event in the following format:

[*cal_name*[@*username*]:]*hour*:*minute*[*%duration*]][*#occurences*][+*time_zone_id*]

Note: You can find a list of valid time zone IDs in `JS_HOME/JS_VERSION/resources/timezones.properties`.

cal_name

Specify the name of an existing calendar, which is used to calculate the days on which the flow runs. If you do not specify a calendar name, it defaults to Daily@Sys. If you do not specify a user name, the submission user user name is assumed. Therefore, the calendar must exist under that user name.

hour:*minute*

Specify the time within each calendar day that the time event begins. You can specify the time in the following formats:

- hour:minutes, for example, `13:30` for 1:30 p.m. You can also specify the wildcard character * in the hour or minutes fields to indicate every hour or every minute, respectively.
- A list of hours, separated by commas, for example, `5,12,23` for 5:00 a.m., noon and 11:00 p.m.
- A range of numbers—for example, `14-17` for on the hour, every hour from 2:00 p.m. to 5:00 p.m.

The value you specify for *hour* must be a number between 0 and 23. The value for *minute* must be a number between 0 and 59. All numbers are values in the 24-hour clock.

%duration

Specify the number of minutes for which the time event should remain valid after it becomes true. After the duration expires, the event can no longer trigger any activity. The default duration is 1 minute. The minimum duration you can specify is also 1 minute.

-F "*file_event***"**

Specifies to automatically trigger a flow when the specified file events are true.

When specifying the file name, you can also specify wildcard characters: * to represent a string or ? to represent a single character. For example, a*.dat* matches `abc.dat`, `another.dat` and `abc.dat23`. S??day* matches `Satdays.tar` and `Sundays.dat`. *e matches `smile`.

Note:

There are some differences between UNIX and Windows when using wildcard characters. Because UNIX is case-sensitive and Windows is not, if you specify `A*`, on UNIX it matches only files beginning with A. On Windows, it matches files beginning with A and a. Also, on UNIX, if you specify `??`, it matches exactly two characters. On Windows, it matches one or two characters. These behaviors are consistent with UNIX ls command behavior, and Windows dir command behavior.

Specify the file event in one of the following formats:

arrival(*file_location*)

Trigger a flow when the specified file arrives in the specified location, and subsequently only if the file is deleted and arrives again. This option looks for a transition from nonexistence of the file to existence. When the file is on a shared file system, specify the file location in the following format:

absolute_directory/filename

exist(*file_location*)

Trigger a flow if the specified file exists in the specified location, and continue to trigger the flow every time the test for the file is performed, as long as the file continues to exist. When the file is on a shared file system, specify the file location in the following format:

absolute_directory/filename

! exist(*file_location*)

Trigger a flow if the specified file does not exist in the specified location, and continue to trigger the flow every time the test for the file is performed, as long as the file does not exist. When the file is on a shared file system, specify the file location in the following format:

absolute_directory/filename

size(*file_location*) *operator size*

Trigger a flow when the size of the file meets the criteria specified with *operator* and *size*. When the file is on a shared file system, specify the file location in the following format:

absolute_directory/filename

Valid values for operator are: >, <, >=,

<=, == and !=.

Note:

For csh, if you specify != (not equal), you need to precede the operator with a backslash escape character

Specify the size in bytes.

age(*file_location*) *operator age*

Trigger a flow when the age of the file meets the criteria specified with *operator* and *age*.

When the file is on a shared file system, specify the file location in the following format:

absolute_directory/filename

Valid values for operator are: >, <, >=, <=, == and !=.

Note:

For csh, if you specify != (not equal), you need to precede the operator with a backslash escape character.

Specify the age in minutes.

-p "*proxy_event***"**

Specifies to automatically trigger a flow when the specified proxy event is true.

Specify the proxy event in one the following formats:

job(exit | done | start | end(*user_name*:*flow_name*:[*subflow_name*:]*job_name*) [*operator value*])

Trigger a flow when the specified job meets the specified condition. You must specify the user name to fully qualify the flow containing the job. You only specify a subflow name if the job is contained within a subflow.

Valid operators are >=, >, <=, <, != and ==.

If you are specifying exit codes, you can specify multiple exit codes when using the operators != and ==. Separate the exit codes with spaces, and specify a number from 0 to 255.

Note:

For csh, if you specify != (not equal), you need to precede the operator with a backslash escape character.

- Example: on successful completion of J1:
  -p "job(done(jdoe:myflow:J1))"
- Example: if payjob exits with an exit code greater than 5:
  -p "job(exit(jdoe:myflow:testflow:payjob)>5)"
- Example: if payjob ends with any of the following exit codes: 5, 10, 12, or 14:
  -p "job(exit(jdoe:myflow:testflow:payjob)==5 10 12 14)"
- Example: if payjob does NOT end with any of the following exit codes: 7, 9, 11:
  -p "job(exit(jdoe:myflow:testflow:payjob)!=7 9 11)"

`jobarray(exit|done|end|numdone|numexit|numend|numstart`
`(`*`user_name`*`:`*`flow_name`*`:[`*`subflow_name`*`:]`
`job_array_name` `)[`*`operator value`*`])`

Trigger a flow when the specified job array meets the specified condition. You must specify the user name to fully qualify the flow containing the job array. You only specify a subflow name if the job array is contained within a subflow.

Valid operators are >=, >, <=, <, != and ==.

- Example: on successful completion of all jobs in Array1:
  -p "jobarray(done(jdoe:myflow:Array1))"
- Example: if arrayjob exits with an exit code greater than 5:
  -p "jobarray(exit(jdoe:myflow:testflow:arrayjob)>5)"
- Example: if more than 3 jobs in A1 exit:
  -p "jobarray(numexit(jdoe:myflow:testflow:arrayjob)>3)"

`flow(exit|done|end|numdone|numexit|numstart(`*`user_name`*`:`
`flow_name``:[`*`subflow_name`*`])[`*`operator value`*`])`

Trigger a flow when the specified flow or subflow meets the specified condition. You must specify the user name to fully qualify the flow. Specify a subflow name if applicable.

Valid operators are >=, >, <=, <, !=, ==.

Example: on successful completion of all jobs in `myflow`:

-p "flow(done(jdoe:myflow))"

Example: if `myflow` exits with an exit code greater than 5:

-p "flow(exit(jdoe:myflow)>5)"

Example: if more than 3 jobs in the subflow testflow exit:

-p "flow(numexit(jdoe:myflow:testflow)>3)"

Note: When Process Manager calculates the number of jobs in a flow, for successful jobs, failed jobs, and so on, it does not count the jobs in a subflow, and it counts a job array as a single job. It also does not count other objects in the flow, such as events or alarms.

-f "*flow_event***"**

Specifies to automatically trigger a flow when the specified flow event(s) are true.

Specify the flow event in one of the following formats:

done(*flow_definition_name***)**

Trigger a flow when the specified flow completes successfully. Specify the flow definition name as follows:

user_name:*flow_definition*

If you do not specify a user name, it defaults to your own.

end(*flow_definition_name***)**

Trigger a flow when the specified flow ends, regardless of exit code. Specify the flow definition name as follows:

user_name:*flow_definition*

If you do not specify a user name, it defaults to your own.

numdone(*flow_definition_name***)** *operator nn*

Trigger a flow when the specified number of jobs in the specified flow complete successfully. Specify the flow definition name as follows:

user_name:*flow_definition*

If you do not specify a user name, it defaults to your own.

Valid operators are >=, >, <=, <, !=, ==.

For example:

numdone(jdoe:payflow)>=5

will trigger the flow you are submitting when 5 jobs complete successfully in payflow.

numstart(*flow_definition_name***)** *operator nn*

Trigger a flow when the specified number of jobs in the specified flow have started. Specify the flow definition name as follows:

user_name:*flow_definition*

If you do not specify a user name, it defaults to your own.

Valid operators are >=, >, <=, <, !=, ==.

numexit(*flow_definition_name***)** *operator nn*

Trigger a flow when the specified number of jobs in the specified flow exit. Specify the flow definition name as follows:

user_name:*flow_definition*

If you do not specify a user name, it defaults to your own.

Valid operators are >=, >, <=, <, !=, ==.

For example:

numexit(jdoe:payflow)>=3

will trigger the flow you are submitting if more than 3 jobs in payflow exit.

exit(*flow_definition_name***)** *operator nn*

Trigger a flow when the specified flow ends with the specified exit code. Specify the flow definition name as follows:

user_name:*flow_definition*

If you do not specify a user name, it defaults to your own.

Valid operators are >=, >, <=, <, !=, ==.

For example:

exit(jdoe:payflow)>=2

will trigger the flow you are submitting if payflow has an exit code greater than or equal to 2.

Note: When Process Manager calculates the number of jobs in a flow, for successful jobs, failed jobs, and so on, it does not count the jobs in a subflow, and it counts a job array as a single job. It also does not count other objects in the flow, such as events or alarms.

-C *combination_type*

When multiple events are specified, the combination type specifies whether one event is sufficient to trigger a flow, or if all of the events must be true to trigger it. The default is all.

AND

Specifies that all events must be true before a flow is triggered. This is the default.

OR

Specifies that a flow will trigger when any event is true.

flow_file_name

Specifies the name of the file containing the flow definition.

-h

Prints the command usage to `stderr` and exits.

-V

Prints the Process Manager release version to `stderr` and exits.

Examples

```
jsub -r -T "Weekends@Sys:0-8:30%30" -F "exists(/tmp/1.dat)" -C
AND myflow.xml
```

Submits the flow definition in `myflow.xml`, to be triggered when both of the following are true:

- Saturdays and Sundays every hour on the half hour, beginning at midnight until 8:00 a.m.
- The file `/tmp/1.dat` exists

  Any triggering information defined within the flow definition is overwritten. If this flow definition already exists, replace it.

```
% jsub -d -F "size(/data/tmp.log) >3500000" -F "arrival(/tmp/1.dat)"
 -C OR backup.xml
```

Submits the flow definition in `backup.xml`, to be triggered when one of the following is true:

- The size of `/data/tmp.log` exceeds 3.5 MB
- The `file /tmp/1.dat` arrives

  Any triggering information defined within the flow definition is overwritten. If this flow definition already exists, create a duplicate.

jtrigger

manually triggers a previously submitted flow definition.

Synopsis

jtrigger [**-u** *user_name*] [**-e** *version*] [**-v "***var*=*value*[**;***var1*=*value1***;**...]**"**] [**-f** *variable_file*] *flow_name flow_name...*

jtrigger -h|-V

Description

You use the **jtrigger** command to trigger a submitted flow definition, which creates a flow associated with that definition. Any events normally used to trigger this definition are ignored at this time.

If no version is specified, triggers the default version of a flow definition.

If the flow definition is on hold, you can use this command to trigger a flow. If the flow definition is not on hold, this command triggers an additional execution of the flow. If you want to trigger a flow whose definition is not yet stored in Process Manager, use the **jrun** command.

Options

-u *user_name*

Specifies the name of the user who owns the flow definition. Use this option if you have administrator authority and you are triggering the flow on behalf of another user.

-e *version*

Specifies which version of the flow to trigger. You can view versions for a flow definition with the command **jdefs** -v.

-v " ***var*=*value*[;var1=***value1***;...]"**

Specifies to pass variables and their values to the flow when triggering it. To specify a list of variables, separate the variable and value pairs with a semi-colon (;). The value of the variable is available only within the scope of the flow itself (local variables only).

- To specify a list of variables, separate the variable and value pairs with a semi-colon (;). For example: var1=1; var2=2;
- Variable names:
  - Can only contain alphanumeric characters and underscores.
  - Cannot start with a number, cannot contain spaces, and cannot be empty.
  - Can have leading and trailing spaces. Leading and trailing spaces are trimmed.
- Variable values can contain spaces and are kept as is.

-f *variable_file*

Specifies the path to a file that contains variables to pass to the flow when triggering it.

Specify a relative path to indicate the file is located in the current working directory.

If both the `-v` and `-f` options are used to define variables, variables defined by both options are passed to the flow when triggering it. If the same variable is defined with the `-v` option and with the `-f` *variable_file* options, the variable specified with `-v` overrides the same variable specified in the variable file.

Example file:

```
# Example variable file
# Variables are delimited by semicolons.
# The semicolon is not required for the last variable in a line

Var1=value1;Var2=value2Var3=value3;Var4=value4;

# Leading and trailing spaces in a variable name are trimmed
   Var5  = value5 ;    Var6=value6
```

Variable file format:

- To specify a list of variables, separate the variable and value pairs with a semi-colon (;). For example: var1=1; var2=2;
- Each line can contain one or more variables.
- Blank lines are ignored.
- Variable names:
  - Can only contain alphanumeric characters and underscores.
  - Cannot start with a number, cannot contain spaces, and cannot be empty.
  - Can have leading and trailing spaces. Leading and trailing spaces are trimmed.
- Variable values can contain spaces and are kept as is.
- Each comment line starts with # and ends with a line break.

flow_name

Specifies the name of the flow definition. To specify a list of flow definitions, separate the flow definition names with a space.

-h

Prints the command usage to `stderr` and exits.

-V

Prints the Process Manager release version to `stderr` and exits.

Examples

```
jtrigger myflow
```

Triggers the flow definition `myflow`, which is owned by the current user.

```
jtrigger -u "user01" payupdt
```

Triggers the flow definition `payupdt`, which is owned by user01.

```
jtrigger -v "PMONTH=October" payflow
```

Triggers the flow definition `payflow`, which is owned by the current user, and passes it a value of October for the variable `PMONTH`.

See also

jrun

junpublish

unpublishes a target flow from Process Manager.

Synopsis

junpublish [**-u** *user_name*] [**-f** *flow_name*]

junpublish [**-h**]|[**-V**]

Description

You use the **jpublish** command to unpublish a target flow from Process Manager. Unplublished target flows can no longer be referred to by dynamic subflows and flow arrays.

Only Process Manager administrators and control administrators can unpublish target flows.

Options

-u *user_name*

Specifies the name of the user who owns the flow. In Windows, the user name must include the domain in the form of *domain_name**user_name*.

-f *flow_name*

Specifies the name of the flow. If you do not specify a flow name, all flows meeting the other criteria are unpublished.

-h

Prints the command usage to `stderr` and exits.

-V

Prints the Process Manager release version to `stderr` and exits.

Examples

```
junpublish -u userA -f flow2
```

Unpublishes the flow2 flow belonging to userA.

```
junpublish -u domainA\userA -f flow2
```

In Windows, unpublishes the flow2 flow belonging to userA, which belongs to the domainA domain.

See also

jpublish

ppmsetvar

sets or removes flow user variables, subflow user variables, and global user variables from a work item in a flow or subflow

Synopsis

ppmsetvar -f *variable_name*=*value*[*variable_name*=*value* ...]

ppmsetvar -p *variable_name*=*value*[*variable_name*=*value* ...]

ppmsetvar -g *variable_name*=*value*[*variable_name*=*value* ...]

ppmsetvar -f -r *variable_name*[*variable_name* ...]

ppmsetvar -p -r *variable_name*[*variable_name* ...]

ppmsetvar -g -r *variable_name*[*variable_name* ...]

ppmsetvar -h | **-V**

Description

This command is installed with Platform LSF.

Use the **ppmsetvar** command to set user variables or remove user variables from a work item in a flow at runtime, and to set global user variables or remove global user variables at runtime.

You can use **ppmsetvar** only to set variables for LSF jobs, job scripts, job arrays and job script arrays. You cannot use **ppmsetvar** to set variables for local jobs. To set variables for local jobs, use variable files.

This is a blocking command.

Important: This command uses the LSF bpost command with slots 4, 5, and 6. If anyone is using **bpost** in your LSF cluster, ensure the slots 4, 5, 6 are not used as this will interfere with the **ppmsetvar** command and may lead to unexpected results.

You can use **ppmsetvar** in conjunction with other methods of setting user variables in Process Manager, such as a variable file or job starter. For example, you could set some variables using **ppmsetvar** and other variables with a variable file. All

user variables will be identified by Process Manager. If you use several methods to set user variables, note that the variable file can override any variables set with **ppmsetvar** as it is read last.

If **ppmsetvar** is used multiple times, the variables will be appended. For example, if you run the following, the end result will be a=10, b=2, c=7, and d=100:

```
ppmsetvar -f a=1 b=2
ppmsetvar -f a=10 c=7
ppmsetvar -f d=100
```

Options

-f *variable_name=value* **[***variable_name=value* **...]**

Sets user variables for a flow. Use this option to set user variables that can only be accessed by work items within a flow. These user variables cannot be accessed from other flows. Separate multiple variables with a space.

-p *variable_name=value* **[***variable_name=value* **...]**

Sets user variables from a subflow to be used in a main flow. Use this option when you want to pass a user variable from a subflow to its main flow. Separate multiple variables with a space.

-g *variable_name=value* **[***variable_name=value* **...]**

Sets global user variables for flows. Use this option to set a global user variable that is available to all flows in the system. Separate multiple variables with a space.

-f -r *variable_name* **[***variable_name* **...]**

Clears the specified user variable for work items within a flow. Separate multiple variables with a space.

-p -r *variable_name* **[***variable_name* **...]**

Clears the specified user variable for a subflow. Separate multiple variables with a space.

-g -r *variable_name* **[***variable_name* **...]**

Clears global user for flows. Separate multiple variables with a space.

Return Values

- 0: command completed successfully.
- 1: command exited due to an invalid parameter.
- 2: command exited due to incorrect variable/value syntax.
- 3: command exited due to unknown reasons.

Set user variables ABC and XYZ that can be accessed by all work items in a flow

```
ppmsetvar -f ABC=123 XYZ=456
```

Clear flow user variables ABC and XYZ

```
ppmsetvar -f -r ABC XYZ
```

Set a user variable from a subflow to a parent flow

For example, the subflow name is Dynamic_Subflow1. In this example, the job sets the user variable with the flow short name. The parent flow can access this user variable by indicating in a work item echo #{result_Dynamic_Subflow1}. In this case, the result of echo #{result_Dynamic_Subflow1} would be xyz100.

```
ppmsetvar -p      result_#{JS_FLOW_SHORT_NAME}=xyz#{MYVAR}
```

Clear a user variable from a subflow

In this example, the subflow clears the user variable with the subflow short name. If the subflow name is Subflow1, this command clear the user variable other_result_Subflow1.

```
ppmsetvar -p -r      other_result_#{JS_FLOW_SHORT_NAME}
```

Set a global user variable from any work item

```
ppmsetvar -g MYGLOBAL=all
```

Clear a global user variable from any work item

```
ppmsetvar -g -r MYGLOBAL
```

Chapter 8. Files

This chapter describes the Process Manager file structure, and provides descriptions and formats of those files you may be required to change while administering Process Manager.

File Structure

When Process Manager is installed, it creates several directories under its top directory. Some of these directories contain scheduling data, others contain working files, or historical data. Some directories are created when the Process Manager server is started, rather than immediately after installation.

Files created on the server host

The directories on the left are those that exist on UNIX after the Process Manager server has been started. The directories on the right are those that exist on a Windows server after installation is complete:

The following describes what each directory contains:

Directory	Contents
<version>/app	Contains the files required to run Process Manager Client.
<version>/bin	Contains the executables for all of the Process Manager commands and the Process Manager Client applications.
<version>/etc	Contains the Process Manager messages and the data specification used by the Process Manager software when creating flows.
<version>/examples	Contains example flows you can use and customize.
<version>/jre	On Windows only, contains the Java™ runtime environment files for the client applications.
`<version>`/install	On UNIX only, contains the Process Manager README file and `install.config` and other installation-specific information.
`<version>`/lib	Contains the Process Manager Java™ files.
`<version>`/resources	Contains the properties files used by Process Manager.
<version>/man	On UNIX only, contains the man pages for each of the Process Manager commands.

Directory	Contents
<version>/*platform*	Contains files specifically for running the Process Manager software on each platform.
conf	Contains the configuration files used by the install script to define the Process Manager environment, including `js.conf` and `fod.conf`, (if failover is installed) `cshrc.js` and `profile.js`.
log	Contains the log files created by Process Manager to store Process Manager Server and failover error logs. Process Manager creates a log file called `jfd.log.`*hostname*, which contains the error logs.
work	Contains working information required by Process Manager to complete its processing, including the following directories: • `alarms`—contains all alarm definitions • `calendar`—contains all system calendar definitions • `events`—contains persisted flow events and manual jobs • `history`—contains all historical data • `lock`—contains lock files to prevent multiple Process Manager Servers from accessing the same working files • `storage`—contains copies of active and completed flows • `system`—contains system status data used byProcess Manager Server during recovery • `templates`—contains templates for inserting custom applications in a flow • `var_comm`—contains temporary values for user variables • `variable`—contains the current values of any global or local user variables • `proxy_storage`—contains persisted proxy event definitions

Process Manager history files

The log files containing Process Manager audit data are located in *JS_TOP*`/work/history`. Process Manager writes audit data to a history file called `history.log.1`.

Process Manager creates a new `history.log.`<*index*> file when the log age has reached the number of hours specified with the parameter JS_HISTORY_LIFETIME in `js.conf`, or the log size has reached the maximum number of bytes indicated with the parameter JS_HISTORY_SIZE in `js.conf`. The <*index*> is incremented by 1 every time a new log is created. When JFD is restarted, JFD scans the `JS_HOME/work/history` directory to determine the last index, and uses that for calculating the index of the next history log file.

History log files are periodically cleaned up according to the time period specified by the parameter JS_HISTORY_CLEAN_PERIOD in `js.conf`. History log files older than the specified time period are cleaned up by the Process Manager server (JFD). The default is 15 days.

If you do not want history log files to be deleted, you can set the parameter JS_HISTORY_ARCHIVE_DIR in `js.conf` and specify a directory in which to store archived history logs. When this parameter is set, instead of deleting the old history logs, the Process Manager Server(JFD) moves them into the directory specified by JS_HISTORY_ARCHIVE_DIR according to the time period specified by JS_HISTORY_CLEAN_PERIOD in `js.conf`.

The parameter JS_HISTORY_LIMIT in `js.conf` specifies the maximum number of history records retrieved when the **jhist** command is used and the Process Manager Client and Process Manager Server are on different hosts. If more than the maximum number of records are available, only the oldest number of records specified in this parameter are retrieved.

Process Manager log files

Process Manager creates a log file called `jfd.log.`*hostname*, which contains the error logs. The file is located within the directory defined by the JS_LOGDIR configuration setting in `js.conf`. By default, this directory is *JS_TOP*`/log`. However, after installation, you can change the value in `js.conf` to use a different directory.

history.log

Process Manager Server stores audit data in a history log file. This log file contains a record of all of the work items that run in the system. It tracks each work item as it enters the Process Manager system, is submitted to LSF master host, and tracks its state as it completes. It records the CPU usage of each job in the system, start time, finish time, and other pertinent information.

When the history log file reaches the maximum size specified in JS_HISTORY_SIZE or the maximum number of hours of data, as specified in JS_HISTORY_LIFETIME in the `js.conf` file, a new history log file is created. The numeric suffix of the file increases as each new file is created.

Example

The following is an excerpt from a history log file:

```
"JOB" "bhorner" "1035277212" "5:bhorner:daily:J1" "Started job" "JobId=1360"
"JOB" "bhorner" "1035277222" "5:bhorner:daily:J1" "Execute job" "JobId=1360|Host=curie"
"JOB" "bhorner" "1035277242" "5:bhorner:daily:J1" "Finished job" "JobId=1360|State=Done|Status
=0|StartTime=1035277208|FinishTime=1035277237|CPUUsage=0.170000 sec"
"FLOW" "bhorner" "1035277242" "5:bhorner:daily" "Finished flow" "State=Done|Status=0|StartTime
=1035277202|FinishTime=1035277242"
"FLOWDEF" "bhorner" "1035309105" "bhorner:untitled1" "Remove flow definition" ""
"FLOWDEF" "bhorner" "1035309105" "bhorner:untitled1" "Submit flow definition" ""
"FLOWDEF" "bhorner" "1035309127" "bhorner:untitled1" "Instantiated flow definition" "FlowId=6"
"FLOWDEF" "bhorner" "1035309127" "bhorner:untitled1" "Trigger flow definition" ""
"FLOW" "bhorner" "1035309127" "6:bhorner:untitled1" "Start flow" ""
```

Description

Data in the file is listed from top (earliest events) to bottom (latest events).

In the above example, the first line shows when J1 in the flow `daily` was submitted to LSF master host. The second line indicates when LSF master host dispatched the job, and the name of the host to which it was dispatched. When the job completes, the job ID and its resulting state and CPU usage are listed, as shown in the third line.

install.config

Process Manager configuration file for installation on UNIX or Linux. Run **`jsinstall -f install.config`** to install Process Manager using the options specified in `install.config`.

Template location

A template `install.config` is located in the installation script directory created when extracting the Process Manager installation script tar file. Edit the file to specify the options for your Process Manager installation.

Format

Each entry in `install.config` has one of the following formats:

```
NAME=VALUE
NAME=
NAME="STRING1 STRING2 ..."
```

The equal sign (`=`) must follow each `NAME` even if no value follows and there should be no space beside the equal sign.

Lines starting with a pound sign (`#`) are comments and are ignored. Do not use `#if` as this is reserved syntax.

JS_ADMINS

Syntax

JS_ADMINS=*primary_admin* [*admin2 admin3* ...]

Description

REQUIRED.

Specifies the administrators who run Process Manager. The first entry is the primary Process Manager administrator, and must be a valid user ID. This name is set at installation time. Any additional administrators specified can be user IDs, UNIX user group names, or Windows active directory user group names.

To specify a list, separate the names with a space. If the Windows user ID or active directory user group contains spaces, enclose the user ID or group name in quotation marks.

For example, to specify Windows users and user groups:

```
JS_ADMINS=DOMAIN\lsfadmin,"DOMAIN\Engineering Group",DOMAIN\userA
```

Default

There is no default for this parameter. A value for the primary Process Manager administrator is set at installation time.

JS_CONTROL_ADMINS

Syntax

JS_CONTROL_ADMINS=*cadmin* [*cadmin1 cadmin2 ...*]

Description

OPTIONAL.

Specifies one or more control administrators who can control any flows or jobs in the Process Manager system, regardless of who the owner is. These administrators cannot submit or remove flows belonging to other users.

Any administrators specified can be user IDs, UNIX user group names, or Windows active driectory user group names.

To specify a list, separate the names with a space. If the Windows user ID or active directory user group contains spaces, enclose the user ID or group name in quotation marks.

For example, to specify Windows users and user groups:

```
JS_CONTROL_ADMINS=DOMAIN\admin,"DOMAIN\QA Group",DOMAIN\userA
```

Default

There is no default for this parameter.

See also

JS_ADMINS

JS_FAILOVER

Syntax

JS_FAILOVER=false | true

Description

OPTIONAL if failover is not used. REQUIRED if failover is used.

Specifies that the failover feature is to be enabled. The failover feature provides automatic failover in the event the Process Manager Server host becomes unavailable.

Default

The default is false—no failover.

See also

JS_FAILOVER_HOST, JS_FOD_PORT

JS_FAILOVER_HOST

Syntax

JS_FAILOVER_HOST=*hostname*

Description

OPTIONAL if failover is not used. REQUIRED if failover is used.

Specifies the fully-qualified hostname of the failover host.

If you specified JS_FAILOVER=true, specify the name of the host where Process Manager Server will run if the primary Process Manager Server host is unavailable.

Default

The default is the same hostname as that specified for Process Manager Server.

See also

JS_FAILOVER, JS_FOD_PORT

JS_FOD_PORT

Syntax

JS_FOD_PORT=*number*

Description

OPTIONAL if failover is not used. REQUIRED if failover is used.

Specifies the port number of the failover daemon `fod`.

If you specified JS_FAILOVER=true, specify the port number to be used for communication between the failover daemon and the Process Manager Server daemon.

Default

The default is 1999.

See also

JS_FAILOVER, JS_FAILOVER_HOST

JS_TOP

Syntax

JS_TOP=/*path*

Description

REQUIRED.

Specifies the full path to the top-level installation directory.

Corresponds to JS_HOME in `js.conf`.

Default

There is no default for this parameter.

JS_HOST

Syntax

JS_HOST=*hostname*

Description

REQUIRED.

Specifies the fully-qualified domain name of the host on which Process Manager Server runs—the name of the host to which the clients connect under normal operations. You cannot specify more than one host.

Default

There is no default for this parameter.

See also

JS_PORT

JS_LICENSE

Syntax

JS_LICENSE=/*path/filename*

Description

Specifies the location of the copy that Process Manager makes of the `license.dat` file.

Default

The default is the parent directory of the current working directory where **`jsinstall`** is run.

JS_MAILHOST

Syntax

JS_MAILHOST=*hostname*

Description

OPTIONAL.

Specifies the name of the mail server host.

On Windows, specify the protocol and name of the mail server host. For an SMTP mail host, specify SMTP:*hostname*. For an exchange mail host, specify Exchange:*hostname*.

On UNIX, specify just the name of the mail server host.

Default

If Process Manager Server is installed on Windows, the default is Exchange:*localhostname*. If Process Manager Server is installed on UNIX, the default is *localhostname*.

JS_PORT

Syntax

JS_PORT=*number*

Description

REQUIRED.

Specifies the port number to be used by Process Manager Client to connect with Process Manager Server.

Default

The default port number is 1966.

See also

JS_HOST

JS_TARDIR

Syntax

JS_TARDIR=/*path*

Description

OPTIONAL.

Specifies the full path to the directory containing the Process Manager distribution files to be installed.

Default

The default is the parent directory of the current working directory where **jsinstall** is run.

LSF_ENVDIR

Syntax

LSF_ENVDIR=/*path*

Description

REQUIRED.

Default

Specifies the directory where LSF master host configuration files are stored. There is no default for this value.

EGO_DAEMON_CONTROL

Syntax

EGO_DAEMON_CONTROL=false | true

Description

OPTIONAL

Specifies whether or not to install Process Manager as an EGO service and enable to control JFD.

Default

The default is EGO_DAEMON_CONTROL=false.

EGO_CONFDIR

Syntax

EGO_CONFDIR=/*path*

Description

REQUIRED if EGO_DAEMON_CONTROL=true

Specifies the directory containing the path to the EGO configuration file ego.conf.

Default

Specifies the directory where EGO configuration files are stored. There is no default for this value.

---

js.conf

This is the configuration file for Process Manager. Process Manager Server receives its configuration information on startup from its configuration file `js.conf`.

When you make changes in this file, restart jfd with the commands **`jadmin start`** and **`jadmin stop`** to make changes take effect.

The file `js.conf` is created automatically during the installation of Process Manager. The values in `js.conf` are set automatically when you install Process Manager Server as follows:

- On UNIX, from the values you specify in `install.config` before running **`jsinstall`**
- On Windows, from the values you specify when prompted by the installation program
- Some values default during installation

  If, for example, when you installed the failover daemon, the default port was already in use, you can change that value directly in `js.conf`. The next time Process Manager Server is started, the new values take effect.

  Some values in `js.conf` are generated and cannot be changed without causing problems. This is indicated in the parameter description.

Format

Each entry in `js.conf` has one of the following formats:

```
NAME=VALUE
NAME=
NAME="STRING1,STRING2,..."
```

The equal sign (`=`) must follow each `NAME` even if no value follows and there should be no space beside the equal sign.

Lines starting with a pound sign (`#`) are comments and are ignored. Do not use `#if` as this is reserved syntax.

Parameters

JS_ADMINS

Syntax

JS_ADMINS=*primary_admin*[**,***admin2*,*admin3*,...]

Description

REQUIRED.

Specifies the administrators who run Platform Process Manager. The first entry is the primary Process Manager administrator, and must be a valid user ID. This name is set at installation time. Any additional administrators specified can be user IDs, UNIX user group names, or Windows active directory user group names.

If you change the list of administrators specified in this parameter, or change the membership in a user group specified in this parameter, these changes will be applied at the next scheduled update or by running **`jreconfigadmin`**.

Windows user IDs and active directory user group names must include the domain name. To specify a list, separate the names with a comma without a space. If the Windows user ID or active directory user group name contains spaces, enclose the user ID or group name in quotation marks.

For example, to specify Windows users and user groups:

```
JS_ADMINS=DOMAIN\lsfadmin,"DOMAIN\Engineering Group",DOMAIN\userA
```

Default

There is no default for this parameter. A value for the primary Process Manager administrator is set at installation time.

JS_ADMIN_UPDATE_INTERVAL

Syntax

JS_ADMIN_UPDATE_INTERVAL=*days*

If set to 0, scheduled updates is disabled.

Description

Specifies the interval between scheduled updates of the list of Process Manager administrators.

If the membership in a user group changes, the list of Process Manager administrators needs updating. This parameter specifies the interval of time between scheduled updates. You can also manually update the list of Process Manager administrators using the **jreconfigadmin** command.

If you disable scheduled updates (by setting this interval to 0), you need to manually run **jsreconfigadmin** whenever you modify the **JS_ADMINS** or **JS_CONTROL_ADMINS** parameters, or whenever you modify any user groups specified in the **JS_ADMINS** or **JS_CONTROL_ADMINS** parameters.

Default

The default is one day.

See also

JS_ADMINS, JS_CONTROL_ADMINS

JS_ALARM_CMD_TIMEOUT

Syntax

JS_ALARM_CMD_TIMEOUT=*seconds*

Description

Specifies the maximum number of seconds that an alarm script executes before Process Manager forcefully terminates it.

Default

The default is 180 seconds.

JS_BSUB_RETRY_EXIT_VALUES

Syntax

JS_BSUB_RETRY_EXIT_VALUES=*exit_code*[**,** *exit_code*...]

Description

Specifies **bsub** exit codes to retry job submission. Separate multiple exit codes with a comma (,).

When job submission fails and the LSF **bsub** command exits with any of the specified exit codes, Process Manager retries to submit the job again. The number of retries is specified with the parameter JS_START_RETRY in `js.conf`.

Default

Undefined-there is no retry when job submission fails.

See also

JS_START_RETRY

JS_CHANGE_FLOW_OWNER

Syntax

JS_CHANGE_FLOW_OWNER=false | true

Description

Specifies whether non-administrator users can trigger flows from other users' flow definitions and own the triggered flows.

Applies only to Published flows.

When this parameter is set to false:

- Only the Process Manager administrator, the Process Manager control administrator, and the user who submitted the flow definition can trigger the flow. The user who submitted the flow definition is the owner of the flow. In Flow Manager, the **Run As** field in the job definition has this user name.

When this parameter is set to true:

- Any user can trigger the flow. The user who triggers the flow is the owner of the flow.
- In Flow Manager, the value defined in the job definition **Run As** field is replaced with the user name of the user who triggered the flow.

If a flow definition has a trigger event defined, the flow owner is the user who submitted the flow definition.

If a user runs a flow with the **jrun** command or through **Run Now** in Flow Editor, the flow owner is the user who invokes the command or the **Run Now** action.

Permissions

The following table illustrates control permissions when JS_CHANGE_FLOW_OWNER=true.

	Can trigger other users' non-published flow definitions	Can trigger other users' published flow definitions	Flow owner/ job owner
Primary administrator, Control administrator	Y	Y	User who triggered the flow.
Non-administrator users	N	Y	User who triggered the flow.

The following table illustrates control permissions when JS_CHANGE_FLOW_OWNER=false.

Users	Can trigger other users' non-published flow definitions	Can trigger other users' published flow definitions	Flow owner/ job owner
Primary administrator, Control administrator	Y	Y	User defined in the flow definition.
Non-administrator users	N	N	Not applicable.

User interface affected

In Flow Manager:

- When a user opens the a job definition dialog from the flow diagram, the **Run As** field always displays the actual job owner.
- Flow and job control action permissions are based on flow owner. The flow owner can:
  - Flows: kill, suspend, resume, rerun, query
  - Jobs: kill, rerun, resume, set job complete, set rerun point
  - Set variables
  - Complete dependencies
  - Complete/query manual jobs

  Commands:
  - `jtrigger -u user_name`

  When JS_CHANGE_FLOW_OWNER=false, **-u** specifies the name of the user who owns the flow definition. This is the user who submitted the flow definition to Process Manager. Use this option if you have administrator authority and you are triggering the flow on behalf of another user.

  When JS_CHANGE_FLOW_OWNER=true, **-u** specifies the name of the user who is to own the triggered flow. Jobs in the flow run under this user name and this user is able to control the flow and its jobs.
- Flow commands:

For flow-related commands such as **jflows**, **jkill**, **jmanuals**, **jrerun**, **jresume**, **jstop**, **-u** specifies the owner of the flow: the user who triggered the flow.

In the output of the **jflows** command, the **USER** field indicates the flow owner: the user who triggered the flow. In the **NAME** field, the full name of the flow definition is displayed (example: LSFAD/lsfadmin:untitled).

- Job commands:

For job-related commands such as **jcomplete**, **jjob**, **-u** specifies the owner of the job.

- For the **jhist** command, **-u** specifies the user who owns the category specified by the **-C** option.

  In the following example, **-u** indicates the owner of the flow definition (user who submitted the flow definition):

  ```
  jhist -C myflowdef -u user1 -f myflow
  ```

  In the following example, **-u** specifies the owner of the flow (user who triggered the flow):

  ```
  jhist -C flow -u user1 -f myflow
  ```

  In the following example, **-u** specifies the owner of the job (user who triggered the flow):

  ```
  jhist -C job -u user1 -f myflow
  ```

  – In the history.log file, the user in the **User Name** field is the owner of the category. For example, the user name in the FLOWDEF category is the flow definition owner(user who submitted the flow definition), the user name in the FLOW category is the flow owner(user who triggered the flow) and the user in the JOB category is the job owner(user who triggered the flow).

Default

JS_CHANGE_FLOW_OWNER=false

See also

JS_LIMIT_USER_VIEW

If you are using JS_LIMIT_USER_VIEW to limit a user's view of flows to his own flows, when you set JS_CHANGE_FLOW_OWNER=true:

- The user who is logged on can view and control flows that he owns. For example, if **userA** submitted the flow definition, but **userB** who is logged on triggered a flow from the flow definition, in the **Definition** tab in Flow Editor, **userB** will see the flow defnition because he is the owner of the flow.
- The user who is logged on can view and control flow definitions that he owns.
- If the flow definition was not submitted by the user who is logged on, operations on the flow definition are disabled.

JS_CONN_TIMEOUT

Syntax

JS_CONN_TIMEOUT=*seconds*

Description

Specifies the maximum number of seconds a Process Manager Client waits for a response from Process Manager Server.

Default

The default is 1024 seconds.

JS_CONTROL_ADMINS

Syntax

JS_CONTROL_ADMINS=*cadmin*[**,***cadmin1*,*cadmin2*,...]

Description

OPTIONAL.

Specifies one or more control administrators who can control any flows or jobs in Process Manager, regardless of who the owner is. These administrators cannot submit or remove flows belonging to other users.

Any administrators specified can be user IDs, UNIX user group names, or Windows active directory user group names.

If you change the list of administrators specified in this parameter, or change the membership in a user group specified in this parameter, these changes will be applied at the next scheduled update or by running **jreconfigadmin**.

Windows user IDs and active directory user group names must include the domain name. To specify a list, separate the names with a comma without a space. If the Windows user ID or active directory group name contains spaces, enclose the user ID or group name in quotation marks.

For example, to specify Windows users and user groups:

```
JS_CONTROL_ADMINS=DOMAIN\admin,"DOMAIN\QA Group",DOMAIN\userA
```

Default

There is no default for this parameter.

See also

JS_ADMINS

JS_DATACAPTURE_TIME

Syntax

JS_DATACAPTURE_TIME="*cal_name***@***user_name***:***hour*[**:***minute*]**"**

Description

Periodically, Process Manager Server interrupts its processing to take an image of the workload in Process Manager, and saves it for recovery purposes. Depending on the amount of workload that passes through your server, recovery of Process Manager following an outage may take some time. The more recent the system image, the shorter the recovery time.

JS_DATACAPTURE_TIME specifies the schedule that determines when an image of the workload in the system is saved for recovery purposes. The schedule is

specified in the form of a calendar name and owner and time, and is enclosed in double quotes. You can specify one or more schedules in a comma-separated list.

During data capture, Process Manager Server does not submit new work. Ideally, schedule this activity at a time when Process Manager is least busy. You may need to adjust this schedule to find the balance between frequency and duration of the process, to ensure server productivity.

Default

The default is Daily@Sys:0:0 (daily at midnight).

JS_DEFAULT_FLOW_WORKING_DIR

Syntax

JS_DEFAULT_FLOW_WORKING_DIR=*path*

Description

Specifies the default working directory that is used by flows when no working directory is defined in the flow definition or passed to Process Manager with the variable JS_FLOW_WORKING_DIR.

Process Manager creates the default working directory and any specified subdirectories if the directories do not exist.

To specify subdirectories, you can use the built-in variables:

- %u for user name
- %t for time stamp
- #{JS_FLOW_NAME}
- #{JS_FLOW_ID}

Work items inherit the flow working directory unless users override the working directory in individual work items.

The override order for working directories is (in order of highest precedence):

1. The working directory defined at the job level, in the Job Definition.
2. The working directory defined at the subflow level, in the subflow's Flow Attributes.
3. The working directory defined at the flow level, in the Flow Attributes.
4. The working directory specified with the variable JS_FLOW_WORKING_DIR when you trigger a flow.
5. The working directory defined with JS_DEFAULT_FLOW_WORKING_DIR in `js.conf`.
6. The execution user's home directory:
   - Linux: `$HOME`
   - Windows: `%HOMEDRIVE%%HOMEPATH%`

Requirements for the working directory:

- The directory and parent directories to the working directory must be shared and accessible to the Process Manager server and all LSF execution hosts.

For example, if you specify JS_DEFAULT_FLOW_WORKING_DIR=/home/lsfadmin/#{JS_FLOW_NAME}_%t, the directory /home/lsfadmin must exist and must be shared.

- The root shared directory must be writable by the user who triggers the flow, and by execution users of individual work items(Run As user).
- If the root directory cannot be shared, the directory:
  - Must exist on all LSF execution hosts
  - Must have the same path on all LSF execution hosts
  - Must be writable by the user who triggers the flow definition and by execution users of work items in the flow and any subflows
- Windows: The working directory must be set to a physical drive on the machine such as C:\ . If you need to refer to a network drive, create a symbolic link inside your C:\ drive.

Automatically created directories have the following permissions:

- Owner is the execution user
- Owning group is the execution user's group
- Read and write execute permissions are set for the owner
- Linux: read and write execute permissions are set for all
- Windows: new folders have full permissions set for the execution user

Default

Undefined. When no working directory is specified for the flow in the flow definition or with JS_FLOW_WORKING_DIR, the location that is used for the working directory is the execution user's home directory:

- Linux: $HOME
- Windows: %HOMEDRIVE%%HOMEPATH%

Examples

Create a separate directory for each flow that is triggered from the flow definition in the user's home directory, with a time stamp at the end:

- Linux: JS_DEFAULT_FLOW_WORKING_DIR=/home/%u/#{JS_FLOW_NAME}_%t

  If the user is user1, the flow name myflow, and the flow ID 123, the directory that is created is:

  /home/user1/123:user1:myflow_1366648793

- Windows: JS_DEFAULT_FLOW_WORKING_DIR=C:\shared\%u\#{JS_FLOW_NAME}_%t

  If the user is user1, the flow name myflow, and the flow ID 123, the directory that is created is:

  c:\shared\123_user1_myflow_1366648793

JS_DEFAULT_USER_VARIABLE_VALUE_IS_EMPTY

Syntax

JS_DEFAULT_USER_VARIABLE_VALUE_IS_EMPTY=false | true

Description

Defines how a user variable whose value is not set is interpreted by Process Manager.

When set to false, when a flow runs and a user variable is specified in the flow and its value is not set, Process Manager interprets the variable as specified. For example: if in the job definition you specified the command `ls #{MYDIR}`, when the flow runs and MYDIR is not set, Process Manager interprets the command as: `ls #{MYDIR}`.

When set to true, when a flow runs and a user variable is specified in the flow and its value is not set, Process Manager interprets the variable as being set to empty. For example: if in the job definition you specified the command `ls #{MYDIR}`, when the flow runs and MYDIR is not set, Process Manager interprets `MYDIR=" "`, and the command as: `ls`.

Default

The default is `false`.

JS_DTD_DIR

Syntax

JS_DTD_DIR=*JS_HOME*/9.1.0.0/etc

Description

DO NOT CHANGE THIS VALUE.

Specifies the directory containing the DTD files required by Process Manager.

Default

The default is *JS_HOME*`/9.1.3.0/etc`

JS_ENABLE_DOUBLE_QUOTE

Syntax

JS_ENABLE_DOUBLE_QUOTE=true | false

Description

Applies only to Linux/UNIX.

Applies to LSF jobs. Configures whether job commands are to be quoted with single quotation marks or double quotation marks.

When this parameter is set to false, the LSF **bsub** job command is always quoted with single quotation marks.

When this parameter is set to true:

•

If the LSF **bsub** job command does not contain single quotation marks, the job command is quoted with single quotation marks.

- If the LSF **bsub** job command contains single quotation marks, it is quoted with double quotation marks.

  Adding double quotation marks means that the command will be interpreted before it is sent to LSF.

  For example, if the command is `ls -l | awk {print '$2}'`, it becomes: `bsub "ls -l | awk {print '$2}'"`.

Default

False. The LSF **bsub** job command is always quoted with single quotation marks.

JS_ENABLE_GROUP_ADMIN

Syntax

JS_ENABLE_GROUP_ADMIN=true | false

Description

When set to true, users that are specified in the GROUP_ADMIN column for an LSF user group in the configuration file `lsb.users` are considered Process Manager Group administrators. In addition, the **Owner** field is displayed in the **Flow Attributes** in Flow Editor, and in the Calendar description in Calendar Editor.

For flows:

- Group administrators can operate on flows that are owned by accounts that are listed in the column GROUP_MEMBER in `lsb.users` for their group.

  Tip: If you want a Group administrator to be able to submit, trigger, and control flows that are owned by another Group administrator, specify the other Group administrator account in the column GROUP_MEMBER in `lsb.users`.

For calendars:

- Group administrators can modify and delete calendars that are owned by accounts that are listed in the column GROUP_MEMBER in `lsb.users` for their group.

  Tip: If you want a Group administrator to be able to modify and delete calendars that are owned by another Group administrator, specify the other Group administrator account in the column GROUP_MEMBER in `lsb.users.`

Default

The default is false. Group administrators that are defined in `lsb.users` have no special privileges in Process Manager.

JS_EXTERNAL_EXECUTION

Syntax

JS_EXTERNAL_EXECUTION=false | true

Description

UNIX only.

Specifies that the external execution daemon (EED) is to be enabled. This allows the Process Manager daemon (JFD) to delegate any command execution to the EED so that the JFD does not need to use the **fork()** function to execute commands. This provides a significant performance enhancement if the JFD's memory footprint is large (usually greater than 1 GB).

JFD communicates with EEDs through full-duplex pipes. JFD passes the commands to execute to the EEDs and reads the output of the commands from the EEDs. The EEDs collect the exit status of the commands.

JFD maintains the connection between itself and the EEDs, and restarts any EED that shuts down. If JFD is shut down, the EED will exit in 15 seconds.

Default

The default is JS_EXTERNAL_EXECUTION=false.

JS_FAILOVER

Syntax

JS_FAILOVER=false | true

Description

OPTIONAL if failover is not used. REQUIRED if failover is used.

Specifies that the failover feature is to be enabled. The failover feature provides automatic failover in the event the Process Manager Server host becomes unavailable.

Default

The default is JS_FAILOVER=false.

See also

JS_FAILOVER_HOST, JS_FOD_PORT

JS_FAILOVER_HOST

Syntax

JS_FAILOVER_HOST=*host_name*

Description

OPTIONAL if failover is not used. REQUIRED if failover is used.

Specifies the fully-qualified host name of the failover host.

If you specified JS_FAILOVER=true, specify the name of the host where Process Manager Server will run if the primary Process Manager Server host is unavailable.

Default

The default is the same host name as that specified for Process Manager Server.

See also

JS_FAILOVER, JS_FOD_PORT

JS_FILEAGENT_SENSITIVITY

Syntax

JS_FILEAGENT_SENSITIVITY=*seconds*

Description

Specifies the time interval in seconds at which Process Manager checks for changes in the file system. This value is used when testing file events.

Default

The default is 30 seconds.

JS_FLOW_STATE_MAIL

Syntax

JS_FLOW_STATE_MAIL=true | false

Description

Specifies whether or not to allow flow email notifications. When set to true, flow email notification occurs as specified by the user in each flow. When set to false, flow email notification does not occur. This setting has no effect on individual job email notifications or alarm email notifications.

Default

The default is true—enable flow email notification.

See also

JS_MAIL_SIZE

JS_FOD_PORT

Syntax

JS_FOD_PORT=*number*

Description

OPTIONAL if failover is not used. REQUIRED if failover is used.

Specifies the port number of the failover daemon `fod`.

If you specified JS_FAILOVER=true, specify the port number to be used for communication between the failover daemon and the Process Manager Server daemon.

Default

The default is 1999.

See also

JS_FAILOVER, JS_FAILOVER_HOST

JS_FY_MONTH

Syntax

JS_FY_MONTH=*n*

Description

OPTIONAL.

Specifies the number that corresponds to the starting month of the fiscal year. This value is used in certain system calendars. Specify a value from 1 (January) to 12 (December). For example, to specify March, specify JS_FY_MONTH=3.

Default

The default is 7 (July).

JS_HISTORY_ARCHIVE_DIR

Syntax

JS_HISTORY_ARCHIVE_DIR=/*path*

Description

Path and name to the directory in which history logs are archived. If the directory does not exist, it is created by Process Manager.

When JS_HISTORY_ARCHIVE_DIR is not defined, any history log files older than the time period specified by JS_HISTORY_CLEAN_PERIOD are deleted by Process Manager.

When JS_HISTORY_ARCHIVE_DIR is defined, any history log files older than the time period specified by JS_HISTORY_CLEAN_PERIOD are moved to the directory specified by JS_HISTORY_ARCHIVE_DIR.

The directory specified by JS_HISTORY_ARCHIVE_DIR must have the same owner and permission as `JS_HOME/work/history/`. The directory must be owned and must be writable by the Process Manager administrator, and must be readable by everyone. JFD checks permissions and reports error messages in `jfd.log.xxx` if it does not have permission to move the history logs into the specified directory.

If failover is configured, the directory specified by JS_HISTORY_ARCHIVE_DIR must be on a shared file system and accessible by both the primary Process Manager server and the failover hosts.

If after setting JS_HISTORY_ARCHIVE_DIR you need to change the location, manually move existing archived history logs to the new location.

You can use the command **jhist -t** to view archived history logs by running **jhist** from the Process Manager server host. When **jhist** is run from the Process Manager server host, Process Manager searches both `JS_HOME/work/history/` and JS_HISTORY_ARCHIVE_DIR for history logs. When **jhist** is run from a host that is not the Process Manager server host, Process Manager only searches `JS_HOME/work/history/` for history logs.

Default

Undefined. History log files are deleted according to the time period defined by JS_HISTORY_CLEAN_PERIOD.

JS_HISTORY_CLEAN_PERIOD

Syntax

JS_HISTORY_CLEAN_PERIOD=*days*

Description

Specifies the time period in days for which history log files are stored. When JS_HSITORY_ARCHIVE_DIR is not defined, any history log files older than the specified time period are deleted by Process Manager. If JS_HISTORY_ARCHIVE_DIR is defined, any history log files older than the specified time period are moved to the directory specified by JS_HISTORY_ARCHIVE_DIR.

Default

The default is 15 days.

JS_HISTORY_LIFETIME

Syntax

JS_HISTORY_LIFETIME=*hours*

Description

Specifies the time period in hours for which history data is collected before a new history log file is created. If the size of the log file exceeds the file size specified in JS_HISTORY_SIZE, a new log file is created, regardless of how many hours of data it contains.

Default

The default is 24 hours.

See also

JS_HISTORY_SIZE

JS_HISTORY_LIMIT

Syntax

JS_HISTORY_LIMIT=*number_of_records*

Description

Specifies the maximum number of history records retrieved when the **jhist** command is used and your Process Manager Client and Process Manager Server are on different hosts. If more than the maximum number of records are available, only the oldest number of records you specify in this parameter are retrieved.

Default

The default is 1500 history records.

JS_HISTORY_SIZE

Syntax

JS_HISTORY_SIZE=*bytes*

Description

Specifies the maximum number of bytes a history log file can grow to before a new log file is created. If the number of hours of data exceeds the time period specified in JS_HISTORY_LIFETIME, a new log file is created, regardless of its size.

Default

The default is 500000 bytes (500 KB).

See also

JS_HISTORY_LIFETIME

JS_HOME

Syntax

JS_HOME=*/path*

Description

Specifies the full path to the top-level installation directory.

Corresponds to JS_TOP in `install.config`.

Default

There is no default for this parameter. A value is set at installation time.

JS_HOST

Syntax

JS_HOST=*host_name*

Description

REQUIRED.

Specifies the fully-qualified domain name of the host on which Process Manager Server runs—the name of the host to which the clients connect under normal operations. You cannot specify more than one host.

Default

There is no default for this parameter. A value is set at installation time.

See also

JS_PORT

JS_IM_ACTIVEPOLICY

Syntax

JS_IM_ACTIVEPOLICY=JF_IM_IPolicy | JF_IM_TPolicy

Description

Specifies the criteria used by Process Manager to determine when to delete a copy of a completed flow from the working set. Also controls the amount of information saved to the cache file.

Specify JF_IM_IPolicy if you want to use the number of occurrences of the flow as the criteria to delete the flow. The oldest occurrence is deleted first.

Specify JF_IM_TPolicy if you want to use the length of time since the flow completed as the criteria to delete the flow. The oldest occurrence is deleted first.

Default

The default policy is JF_IM_IPolicy.

See also

JS_IM_POLICY_CHECKING_INTERVAL

JS_IM_POLICY_CHECKING_INTERVAL

Syntax

JS_IM_POLICY_CHECKING_INTERVAL=*minutes*

Description

Specifies the time interval in minutes at which Process Manager applies the policy specified in JS_IM_ACTIVEPOLICY.

Default

The default interval is 12 minutes.

See also

JS_IM_ACTIVEPOLICY, JS_IM_POLICY_LIFETIME, JS_IM_POLICY_NOOFFLOWS

JS_IM_POLICY_LIFETIME

Syntax

JS_IM_POLICY_LIFETIME=*days*

Description

Specifies the time interval in days after which completed flows are deleted from the Process Manager working set.

This value takes effect when JS_IM_ACTIVEPOLICY = JF_IM_TPolicy. The oldest occurrence is deleted first.

Default

The default is 5 days.

See also

JS_IM_ACTIVEPOLICY, JS_IM_POLICY_CHECKING_INTERVAL, JS_IM_POLICY_NOOFFLOWS

JS_IM_POLICY_NOOFFLOWS

Syntax

JS_IM_POLICY_NOOFFLOWS=*number*

Description

Specifies the number of copies of a completed flow that are retained within the Process Manager working set. Specify a number greater than 0.

This value takes effect when JS_IM_ACTIVEPOLICY = JF_IM_IPolicy. The oldest occurrence is deleted first.

Default

The default is 36 copies.

See also

JS_IM_ACTIVEPOLICY, JS_IM_POLICY_LIFETIME, JS_IM_POLICY_CHECKING_INTERVAL

JS_JOB_SUBMISSION_RETRY

Syntax

JS_JOB_SUBMISSION_RETRY=true | false

Description

Deprecated. Use JS_BSUB_RETRY_EXIT_VALUES instead.

Specifies whether to retry job submission after the job fails.

If JS_JOB_SUBMISSION_RETRY=true and JS_BSUB_RETRY_EXIT_VALUES is not defined, job submission is retried when the LSF bsub exit code is 1, 255, 127, -1, 128.

If JS_BSUB_RETRY_EXIT_VALUES is defined, JS_JOB_SUBMISSION_RETRY is ignored and considered deprecated, and Process Manager retries to submit the job again when LSF bsub exits with the exit codes specified in JS_BSUB_RETRY_EXIT_VALUES.

If JS_BSUB_RETRY_EXIT_VALUES and JS_JOB_SUBMISSION_RETRY are not defined, there is no retry when job submission fails.

Default

False. There is no retry when job submission fails.

JS_JOB_SUBMISSION_TIMEOUT

Syntax

JS_JOB_SUBMISSION_TIMEOUT=*seconds*

Description

Applies to job scripts.

Maximum number of seconds that the job script can take to submit jobs to LSF before the Process Manager daemon (jfd) terminates the script.

Specify 0 to set the maximum time to unlimited.

Default

300 seconds

JS_JOB_SUBMISSION_SCRIPT_TIME_OUT

Syntax

JS_JOB_SUBMISSION_SCRIPT_TIME_OUT=*seconds*

Description

Specifies the length of time for which the **job submission script** can run before the Process Manager daemon (JFD) kills the script.

Default

The default is 300 seconds.

JS_JOB_SUBMIT_NOTICE_THRESHOLD

Syntax

JS_JOB_SUBMIT_NOTICE_THRESHOLD=*number*

Description

Specifies when job queue size is logged. When the job queue reaches the size specified by JS_JOB_SUBMIT_NOTICE_THRESHOLD and every multiple of that number, the job queue size is logged in *$JS_TOP*`/log/jfd.log.`*host_name*. It is logged at LOG_NOTICE level.

Default

100 entries

JS_KRB_KEYTAB_FILE

Syntax

JS_KRB_KEYTAB_FILE=*/path/filename*

Description

Used for Kerberos integration with Process Manager, when the parameter JS_KRB_USE_KEYTAB=true.

Path to the Kerberos keytab file on the Process Manager server host.

Default

If this parameter is not specified, the default value is `/etc/krb5.keytab` on the Process Manager Server host.

See also

JS_KRB_USE_KEYTAB

JS_KRB_USE_KEYTAB

Syntax

JS_KRB_USE_KEYTAB=true | false

Description

Used for Kerberos integration with Process Manager. When set to true, this parameter specifies to Process Manager to use the Kerberos keytab file to generate user TGTs before reaching the maximum renewal lifetime defined by the parameter LSB_KRB_RENEW_MARGIN in `lsf.conf`. This is useful when you run flows repeatedly over a long period of time (monthly, annually) or when you have flows that run for a very long time so that user TGTs are renewed before the maximum renewal lifetime period is reached.

When set to false, Process Manager automatically renews user TGTs but will be unable to renew them once the maximum renewal lifetime period has been reached. To prevent jobs from failing due to lack of credentials, users with accounts used to run jobs will need to log into Process Manager at least once during the maximum renewal lifetime period so that Process Manager can generate a new user TGT before the maximum renewal lifetime period is reached.

Default

JS_KRB_USE_KEYTAB=false

See also

JS_KRB_KEYTAB_FILE

JS_LARGE_FLOW_SAVE

Syntax

JS_LARGE_FLOW_SAVE=y | n

Description

Used to improve client performance in Flow Editor and Flow Manager when a user opens or triggers a flow that is larger than 12 MB.

When set to `y`, a temporary file is saved in the system temporary directory (Windows: user's temporary directory, Unix/Linux: `/var/tmp` or `/tmp`) when a user opens or triggers a large flow. This improves client performance as the file is not saved in memory, but temporarily on disk. Once the flow is open or triggered, the file is automatically deleted.

When set to n, when a user opens or triggers a flow, the flow is saved in memory.

Default

Undefined, same as n: the flow is saved in memory when it is opened or triggered.

JS_LICENSE_FILE

Syntax

JS_LICENSE_FILE=/*path/filename*

Description

DO NOT CHANGE THIS VALUE.

Specifies the location of the copy that Process Manager makes of the `license.dat` file.

If Process Manager is unable to find the license in the location specified by JS_LICENSE_FILE, or the specified license is not valid, Process Manager uses the license file indicated by LSF_LICENSE_FILE in `lsf.conf`. This makes it easier for administration, as the administrator only needs to update the LSF license, and Process Manager will automatically retrieve an updated license.

Default

The default is *JS_HOME*`/conf`.

JS_LIMIT_FLOW_CHART_VIEW

Syntax

JS_LIMIT_FLOW_CHART_VIEW=true | false

Description

Specifies whether users can see the chart view of a flow and flow definition.

When this parameter is set to false, users who can view a flow or flow definition, can see everything about the flow: flow chart, general information, subflows and jobs, flow data, and flow history. These users can also perform job and subflow-specific actions.

When this parameter is set to true, there are restrictions on which users can see the flow chart of a flow and flow definition and associated actions the user can take on components of the flow.

Permissions

The following table illustrates permissions when JS_LIMIT_FLOW_CHART_VIEW=true.

	Can see the flow chart of a flow definition	**Can see the flow chart of a flow**
Process Manager administrator (as defined by JS_ADMINS)	Y	Y

	Can see the flow chart of a flow definition	Can see the flow chart of a flow
Control administrator (as defined by JS_CONTROL_ADMINS)	Y, if the user is the flow definition owner.	Y, if the user is both the flow definition owner and flow owner. For example, if a user triggered a flow from another user's published flow definition, he will not be able to view the flow chart. He is the flow owner, but not the flow definition owner.
Non-administrator users	Y, if the user is the flow definition owner.	Y, if the user is both the flow definition owner and flow owner. For example, if a user triggered a flow from another user's published flow definition, he will not be able to view the flow chart. He is the flow owner, but not the flow definition owner.

The following table illustrates permissions when JS_LIMIT_FLOW_CHART_VIEW=false.

	Can see the flow chart of a flow definition	Can see the flow chart of a flow
Process Manager administrator (as defined by JS_ADMINS)	Y	Y
Control administrator (as defined by JS_CONTROL_ADMINS)	Y, if the user can see the flow definition.	Y, if the user can see the flow.
Non-administrator users	Y, if the user can see the flow definition.	Y, if the user can see the flow.

User interface affected

In Flow Manager:

- If the user does not have permission to see the flow chart: the Open and Open in New Frame on the right-click menu and top drop-down menu will be disabled.

Default

The default is false.

See also

JS_ADMINS, JS_CONTROL_ADMINS, JS_LIMIT_USER_VIEW, JS_CHANGE_FLOW_OWNER

JS_LIMIT_USER_VIEW

Syntax

JS_LIMIT_USER_VIEW=true | false

Description

Specifies whether a user's view of flows is limited to their own flows, or includes all flows in Process Manager. For a guest user, limits the access so that no flows are viewable.

When this parameter is set to true and JS_CHANGE_FLOW_OWNER is set to true:

- The user who is logged on can view and control flow definitions that he owns
- If the flow was not created by the user who is logged on, operations on the flow definition are disabled.
- The user who is logged on can view and control flows that he owns.

Default

The default is false.

See also

JS_CHANGE_FLOW_OWNER

JS_LIMIT_MODIFY_GLOBALVAR

Syntax

JS_LIMIT_MODIFY_GLOBALVAR=true | false

Description

Specifies whether to allow or deny users the privilege of controlling global variables through jsetvars or flow manager. When set to true, only administrators can modify global variables. When set to false, users and administratos can modify global variables.

Default

The default is true.

JS_LOCAL_EXECUTION_TIMEOUT

Syntax

JS_LOCAL_EXECUTION_TIMEOUT=*seconds*

Description

Specifies the amount of time, in seconds, that each local job is allowed to run before Process Manager forcefully terminates the job. If you set this to be zero or less, Process Manager uses the default value.

Default

Linux and UNIX: no timeout on the job. There is no limit on how long the local job can run.

Windows: 180 seconds.

JS_LOCAL_JOBS_LIMIT

Syntax

JS_LOCAL_JOBS_LIMIT=*number_of_jobs*

Description

Specifies the maximum number of local jobs that can be run in parallel on the Process Manager Server.

When this parameter is set to 0, local jobs are disabled:

- If any existing flows contain local jobs, the local jobs are not run and exit with an exit code of 1.
- In Flow Editor, local jobs cannot be inserted in the flow definition, and any flow definitions that contain local jobs cannot be submitted.
- In Flow Manager, flow definitions that contain local jobs cannot be triggered, released, or published.

Default

The larger number between 1, and the number of cores on the Process Manager host - 2. For example, if the Process Manager host has 4 cores, the maximum number of local jobs that can be run in parallel is 2.

JS_LOGDIR

Syntax

JS_LOGDIR=/*path*

Description

Specifies the name of the directory containing the `jfd.log` file, the error log file for the Process Manager Server daemon.

Default

The default is *JS_HOME*`/log`.

JS_LOGIN_REQUIRED

Syntax

JS_LOGIN_REQUIRED=true | false

Description

Specifies if a user login is required to access Process Manager. Set as true if you want to require users to log in before using Process Manager.

If you set this parameter to true, set JS_LOGIN_REQURED=true in the js.conf file of all Process Manager clients. An error is displayed to the user when the value of the JS_LOGIN_REQUIRED parameter on the client does not match that of the server. When set to false, users are not required to specify a user name and password to use Process Manager.

Default

JS_LOGON_RETRY

Syntax

JS_LOGON_RETRY=*number*

Description

Specifies the number of times Process Manager should resubmit the same job to LSF when logon fails.

Default

The default is 0.

JS_LOGON_RETRY_DELAY

Syntax

JS_LOGON_RETRY_DELAY=*seconds*

Description

Specifies the number of seconds to wait in between each try to resubmit the same job to LSF when logon fails.

Default

The default is 10 seconds.

JS_LOG_MASK

Syntax

JS_LOG_MASK=*value*

Description

Specifies the error logging level used. Change this value only as directed by IBM Technical Support. Valid values from highest to lowest are:

- LOG_EMERG
- LOG_ALERT
- LOG_CRIT
- LOG_ERR
- LOG_WARNING
- LOG_NOTICE
- LOG_INFO
- LOG_DEBUG
- LOG_DEBUG1
- LOG_DEBUG2
- LOG_DEBUG3

The level specified by the log mask determines which messages are recorded and which are discarded. All messages logged at the specified level or higher are recorded, while lower level messages are discarded.

For debugging purposes, the level LOG_DEBUG contains the fewest number of debugging messages and is used for basic debugging. The level LOG_DEBUG3 records all debugging messages, and can cause log files to grow very large; it is not often used. Most debugging is done at the level LOG_DEBUG2.

Default

The default is JS_LOG_MASK=LOG_NOTICE.

JS_LSF_COMMAND_TIMEOUT

Syntax

JS_LSF_COMMAND_TIMEOUT=*seconds*

Description

Maximum number of seconds that any LSF command can take to execute before the Process Manager daemon (jfd) terminates it. This is used when the Process Manager daemon (jfd) calls any LSF command. If there are problems with command execution, the Process Manager daemon will terminate the process after the specified timeout value.

Default

300 seconds

JS_MAILHOST

Syntax

JS_MAILHOST=[SMTP: | Exchange:]*hostname*

Description

OPTIONAL.

Specifies the name of the mail server host.

On Windows, specify the protocol and name of the mail server host. For an SMTP mail host, specify SMTP:*hostname*. For an exchange mail host, specify Exchange:*hostname*.

On UNIX, specify just the name of the mail server host.

Default

If Process Manager Server is installed on Windows, the default is Exchange:*localhostname*. If Process Manager Server is installed on UNIX, the default is *localhostname*.

JS_MAILPROG

Syntax

`JS_MAILPROG=`*file_name*

Description

Path and file name of the mail program used by Process Manager to send email. It affects all emails sent, such as the sending of messages from the Flow Attribute, from alarms, and from manual jobs.

You can write your own custom mail program and set JS_MAILPROG to the path where this program is located.

The program:

- Can be a shell script, a binary executable, or, a `.bat` file on Windows. Any program or shell script that accepts the arguments and input, and delivers the mail correctly, can be used.
- Must read the body of the mail message from standard input. The end of the message is marked by end-of-file.
- Must be executable by any user.
- Must follow the same protocol as sendmail. For example:

```
/usr/mymail.sh -oi -F "Subject" -f "JFD" usera@ibm.com </dev/stdin
```

Process Manager calls JS_MAILPROG with three arguments: one argument gives the full name of the subject -F "Subject", the other argument gives the address of the sender -f , and the third argument the email address to which to send the message.

If you change your mail program, restart jfd with the commands **jadmin start** and **jadmin stop** to make changes take effect.

Examples

```
JS_MAILPROG=/serverA/tools/lsf/bin/unixhost.exe
```

Default

By default, this parameter is undefined and the following default mail programs are used:

- UNIX: **/usr/lib/sendmail**
- Windows: `lsmail.exe`

See also

JS_MAILHOST to specify the name of the mail server host.

JS_MAILSENDER to specify the email address of the sender.

JS_MAILSENDER

Syntax

JS_MAILSENDER=*emailaddress@emaildomain*

Description

OPTIONAL.

Specifies the email address that is used to send the job notification email. This email address is the sender address of any job notification or alarm emails.

Valid values

Any valid email address. There cannot be any spaces in the email address.

Default

The default name of the email sender is JFD.

JS_MAIL_SIZE

Syntax

JS_MAILSIZE=*bytes*

Description

OPTIONAL.

Specifies the maximum size allowed for a flow email notifications. An email larger than the maximum size specified is truncated.

Default

The default is 1000000 (1MB).

JS_MAX_VAR_SUBSTITUTIONS

Syntax

JS_MAX_VAR_SUBSTITUTIONS=*number*

Description

OPTIONAL.

Specifies the maximum number of variable substitutions that can be performed in a single job definition field.

Default

20 substitutions

JS_PORT

Syntax

JS_PORT=*number*

Description

REQUIRED.

Specifies the port number to be used by the Process Manager Client to connect with the Process Manager Server.

Default

The default port number is 1966.

See also

JS_HOST

JS_POSIX_TZ

Syntax

JS_POSIX_TZ=*time_zone*

Description

Use only if your Process Manager server is running on AIX® 6.1, and Olson time zone is set in the `/etc/environment` file or through the `TZ` environment variable.

Specifies a time zone according to the POSIX time zone specification. The set time zone must be the equivalent of the Olson time zone set for the system.

This time zone setting does not affect the operating system setting. This setting is used by the Process Manager Server to work around a known issue in AIX 6.1 that ignores the set Olson time zone and uses instead Coordinated Universal Time(UTC)/Greenwich Mean Time(GMT).

The *time_zone* must be indicated according to the POSIX specification:

```
std offset dst                [offset],start[/time],end[/time]
```

where:

- [ ] indicate optional parameters

- `std offset` specifies the standard time when the time zone is not in `dst`
- `dst [offset]` specifies the time during `dst` for the time zone
- `start[/time]` specifies the start time of `dst`
- `end[/time]` specifies the end time of `dst`
- `start` and `end` is in the format, `Mm.w.d`:
- `m` is the month (number between 1 - 12, and 1 is January)
- `w` is the week (number between 1 - 5, 1 is first week, 5 is last week of the month)
- `d` is the day (number between 0 - 6, 0 is Sunday)
- `[/time]` is in regular time format. For example: 3:00, or simplified to 3. If no time is specified the default is 02:00 or 2.

For additional information on the POSIX time zone, refer to: http://www.gnu.org/software/libc/manual/html_node/TZ-Variable.html.

Examples

Olson time zone	Equivalent POSIX time zone
America/New_York	EST5EDT, M3.2.0,M11.1.0
Europe/Paris	CET-1CEST,M3.5.0,M10.5.0/3
Europe/Brussels	CET-1CEST,M3.5.0,M10.5.0/3

Default

Undefined, the time zone used is the time zone set on the operating system of the Process Manager Server.

JS_PROXY_DURATION

Syntax

JS_PROXY_DURATION=*minutes*

Description

Specifies the length of time within which proxy events should remain valid after becoming true.

A value of 0 indicates that the proxy event will always remain valid and will never expire after it becomes true.

Default

The default is 0.

JS_SERVICE_STOP_PEND_WAIT

Syntax

JS_SERVICE_STOP_PEND_WAIT=*milliseconds*

Description

Windows only.

Specifies the amount of time that the Process Manager daemon (JDF) instructs the Windows service controller to wait before killing the service during a system reboot or shutdown.

When a host is being rebooted or shut down, the Process Manager daemon (JFD) sends a STOP_PEND message together with a waitHint to the Windows service controller to wait for this amount of time before allowing the system to kill the service.

The system registry key **HKEY_LOCAL_MACHINE** > **SYSTEM** > **CurrentControlSet** > **Control** > **WaitToKillServiceTimeout** normally specifies the amount of time that Windows waits before killing all services. JS_SERVICE_STOP_PEND_WAIT must be less than or equal to this value; otherwise the Windows service controller kills the service in the amount of time as specified in this registry key, before this parameter can take effect.

Default

The default is specified in the system registry key **HKEY_LOCAL_MACHINE** > **SYSTEM** > **CurrentControlSet** > **Control** > **WaitToKillServiceTimeout**. The default value for this system registry key is 20000 milliseconds (20 seconds).

JS_SKIP_HOST_CHECK

Syntax

JS_SKIP_HOST_CHECK=false | true

Description

OPTIONAL.

Affects on which host the Process Manager server (`jfd`) can be started.

When this parameter is undefined or set to false, the Process Manager server (`jfd`) can only be started on the hosts specified with the parameters JS_HOST and JS_FAILOVER_HOST in `js.conf`.

When this parameter is set to true, the mechanism to check and ensure that the Process Manager server (`jfd`) is started on either JS_HOST or JS_FAILOVER_HOST will be skipped. You can start the Process Manager server on any server host in the LSF cluster.

Default

The default is undefined: the host check is not skipped and the Process Manager server (`jfd`) can only be started on the hosts specified with the parameters JS_HOST and JS_FAILOVER_HOST in `js.conf`.

See also

JS_FAILOVER, JS_FAILOVER_HOST, JS_HOST in `js.conf`

JS_START_RETRY

Syntax

JS_START_RETRY=*retries*

Description

Specifies the maximum number of times Process Manager tries again to submit a job or job array, or start a job or job array before raising a Start Failed exception.

Default

The default is 20 times.

See also

JS_BSUB_RETRY_EXIT_VALUES

JS_SU_NEW_LOGIN

Syntax

JS_SU_NEW_LOGIN=true | false

Description

Specifies whether or not to start a new login shell when Process Manager server submits jobs to LSF.. When this parameter is set to true, a new login shell is started when a job is submitted to LSF.

Default

The default is true.

JS_TIME_ZONE

Syntax

JS_TIME_ZONE=client | server | UTC

Description

Specifies the time zone displayed by the client. The time zone is displayed and used to define and schedule flows.

Server time zone is the time at the server.

Client time zone is the time at the client.

UTC time zone is Coordinated Universal Time (also known as Greenwich Mean Time or GMT).

Note: If you are scheduling a future event that takes place after a seasonal time change (such as Daylight Savings Time) and you have configured either server or client time zones, the time displayed at submission is the time at which the job runs.

When the server and the client are in the same time zone, the server time zone is displayed.

Default

The default is client.

JS_UNICODE_CMD_UPLUS

Syntax

JS_UNICODE_CMD_UPLUS=true | false

Description

Specifies whether or not to enable double-byte character set on job command. When enabled, one can run job command in native encoding when a job is submitted to **unicodecmd**. Refer to the Configure a queue to support DBCS section for more details.

Default

The default is false—native encoding on job command is not supported.

JS_UNICODE_ESCAPE_CONVERT

Syntax

JS_UNICODE_ESCAPE_CONVERT=true | false

Description

Specifies whether Process Manager translates double-byte character sets to the Unicode character escape sequence.

When JS_UNICODE_ESCAPE_CONVERT=true, Process Manager supports double-byte character sets. For example, if a job name contains Chinese characters, Process Manager translates it to the Unicode character escape sequence such as \u1234.

In some cases, you may already have Unicode escape sequences in user names, job names, and so on. You do not want Process Manager to translate to the Unicode character set. You want Process Manager to use the text without converting it into Unicode format. In such cases, set JS_UNICODE_ESCAPE_CONVERT=false. Note, however, that setting JS_UNICODE_CONVERT=false disables double-byte character support and as a result, you may see garbled characters.

Default

JS_UNICODE_ESCAPE_CONVERT=true: Process Manager supports double-byte character sets and translates to the Unicode escape sequence.

JS_VARIABLE_CLEANUP_PERIOD

Syntax

JS_VARIABLE_CLEANUP_PERIOD=*hours*

Description

Specifies the cleanup frequency of variable log files. At the specified cleanup period, the JFD Process Manager daemon rewrites the `variable.log` file to reduce its size. This helps to reduce the startup time next time JFD restarts.

Default

The default cleanup period is set to 24 hours: **JS_VARIABLE_CLEANUP_PERIOD=24**

JS_WORK_DIR

Syntax

JS_WORK_DIR=/*path*

Description

Specifies the name of the directory containing work data.

Default

The default is *JS_HOME*/`work`.

LSF_ENVDIR

Syntax

LSF_ENVDIR=/*path*

Description

REQUIRED.

Default

Specifies the directory where the LSF configuration files are stored. There is no default for this value. A value is set at installation time.

---

name.alarm

When you define an alarm, you create an individual file for each alarm. The file name is the name of the alarm and the file type is alarm.

Format

Each alarm file has the following format:

```
DESCRIPTION=<description>
NOTIFICATION=Email[user1 user2 user3]
```

Example

The following example shows a database failure alarm definition. The alarm is called `DBMSfail.alarm`. Its contents are:

```
DESCRIPTION=Send DBA a message indicating DBMS failure
NOTIFICATION=Email[bsmith ajones]
```

Notices

This information was developed for products and services offered in the U.S.A.

IBM may not offer the products, services, or features discussed in this document in other countries. Consult your local IBM representative for information on the products and services currently available in your area. Any reference to an IBM product, program, or service is not intended to state or imply that only that IBM product, program, or service may be used. Any functionally equivalent product, program, or service that does not infringe any IBM intellectual property right may be used instead. However, it is the user's responsibility to evaluate and verify the operation of any non-IBM product, program, or service.

IBM may have patents or pending patent applications covering subject matter described in this document. The furnishing of this document does not grant you any license to these patents. You can send license inquiries, in writing, to:

IBM Director of Licensing
IBM Corporation
North Castle Drive
Armonk, NY 10504-1785
U.S.A.

For license inquiries regarding double-byte character set (DBCS) information, contact the IBM Intellectual Property Department in your country or send inquiries, in writing, to:

Intellectual Property Licensing
Legal and Intellectual Property Law
IBM Japan Ltd.
19-21, Nihonbashi-Hakozakicho, Chuo-ku
Tokyo 103-8510, Japan

The following paragraph does not apply to the United Kingdom or any other country where such provisions are inconsistent with local law:

INTERNATIONAL BUSINESS MACHINES CORPORATION PROVIDES THIS PUBLICATION "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF NON-INFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. Some states do not allow disclaimer of express or implied warranties in certain transactions, therefore, this statement may not apply to you.

This information could include technical inaccuracies or typographical errors. Changes are periodically made to the information herein; these changes will be incorporated in new editions of the publication. IBM may make improvements and/or changes in the product(s) and/or the program(s) described in this publication at any time without notice.

Any references in this information to non-IBM Web sites are provided for convenience only and do not in any manner serve as an endorsement of those Web

sites. The materials at those Web sites are not part of the materials for this IBM product and use of those Web sites is at your own risk.

IBM may use or distribute any of the information you supply in any way it believes appropriate without incurring any obligation to you.

Licensees of this program who wish to have information about it for the purpose of enabling: (i) the exchange of information between independently created programs and other programs (including this one) and (ii) the mutual use of the information which has been exchanged, should contact:

IBM Corporation
Intellectual Property Law
Mail Station P300
2455 South Road,
Poughkeepsie, NY 12601-5400
USA

Such information may be available, subject to appropriate terms and conditions, including in some cases, payment of a fee.

The licensed program described in this document and all licensed material available for it are provided by IBM under terms of the IBM Customer Agreement, IBM International Program License Agreement or any equivalent agreement between us.

Any performance data contained herein was determined in a controlled environment. Therefore, the results obtained in other operating environments may vary significantly. Some measurements may have been made on development-level systems and there is no guarantee that these measurements will be the same on generally available systems. Furthermore, some measurement may have been estimated through extrapolation. Actual results may vary. Users of this document should verify the applicable data for their specific environment.

Information concerning non-IBM products was obtained from the suppliers of those products, their published announcements or other publicly available sources. IBM has not tested those products and cannot confirm the accuracy of performance, compatibility or any other claims related to non-IBM products. Questions on the capabilities of non-IBM products should be addressed to the suppliers of those products.

All statements regarding IBM's future direction or intent are subject to change or withdrawal without notice, and represent goals and objectives only.

This information contains examples of data and reports used in daily business operations. To illustrate them as completely as possible, the examples include the names of individuals, companies, brands, and products. All of these names are fictitious and any similarity to the names and addresses used by an actual business enterprise is entirely coincidental.

COPYRIGHT LICENSE:

This information contains sample application programs in source language, which illustrates programming techniques on various operating platforms. You may copy, modify, and distribute these sample programs in any form without payment to IBM, for the purposes of developing, using, marketing or distributing application

programs conforming to the application programming interface for the operating platform for which the sample programs are written. These examples have not been thoroughly tested under all conditions. IBM, therefore, cannot guarantee or imply reliability, serviceability, or function of these programs. The sample programs are provided "AS IS", without warranty of any kind. IBM shall not be liable for any damages arising out of your use of the sample programs.

Each copy or any portion of these sample programs or any derivative work, must include a copyright notice as follows:

© (your company name) (year). Portions of this code are derived from IBM Corp. Sample Programs. © Copyright IBM Corp. _enter the year or years_.

If you are viewing this information softcopy, the photographs and color illustrations may not appear.

Trademarks

IBM, the IBM logo, and ibm.com® are trademarks of International Business Machines Corp., registered in many jurisdictions worldwide. Other product and service names might be trademarks of IBM or other companies. A current list of IBM trademarks is available on the Web at "Copyright and trademark information" at http://www.ibm.com/legal/copytrade.shtml.

Java and all Java-based trademarks and logos are trademarks or registered trademarks of Oracle and/or its affiliates.

Linux is a trademark of Linus Torvalds in the United States, other countries, or both.

LSF, Platform, and Platform Computing are trademarks or registered trademarks of International Business Machines Corp., registered in many jurisdictions worldwide.

Microsoft, Windows, Windows NT, and the Windows logo are trademarks of Microsoft Corporation in the United States, other countries, or both.

UNIX is a registered trademark of The Open Group in the United States and other countries.

Other company, product, or service names may be trademarks or service marks of others.

Printed in USA

SC22-5398-02